"APPROVED FOR RELEASE: 09/01/2001 CIA-RDP86-00513R001961310012-7

TSAPKO, A.S., otv.red.; GLIKMAN, S.A., doktor khim. nauk, prof., red.; GEMP, K.P., st. nauchn. sotr., red.; GRYUNER, V.S., doktor tekhn. nauk, red.; DANILOV, S.N., red.; YEVTUSHENKO, V.A., kand. khim. nauk, red.; ZINOVA, A.D., kand. biol. nauk, red.; KIZEVETTER, I.V., doktor tekhn. nauk, red.; KIREYEVA, M.S., kand. biol. nauk, red.; VULIKHMAN, M.A., red.; POTEKHIN, I.P., red.

[Transactions of the First All-Union Conference of Workers in the Algal Industry of the U.S.S.R.] Trudy Pervogo Vsesoiuznogo nauchno-tekhnicheskogo soveshchaniia po vodoroslevoi promyshlennosti SSSR. Arkhangel'sk, Arkhangel'skoe knizhnoe izd-vo. Vol.1. 1962. 214 p. (MIRA 17:12)

1. Vsesoyuznoye soveshchaniye rabotnikov vodoroslevoy promyshlennosti SSSR. 1st. 2. Chlen-korrespondent AN SSSR (for Danilov). 3. Vsesoyuznyy nauchnyy institut morskogo rybnogo khozyaystva i okeanografii (for Kireyeva). 4. Nachal'nik Upravleniya rybnoy promyshlennosti Arkhangel'skogo sovnarkhoza (for TSapko). 5. Saratovskiy gosudarstvennyy universiteta im. N.G.Chernyshevskogo (for Glikman).

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VULIKHMAN, V.A.; FRIDMAN, M.S.; FINKEL', A.I.; YUSIM, G.M.

Automated production line for low-module wetting of raw materials. Gidroliz. i lesokhim. prom. 17 no.6:26-27 '64. (MIRA 17:12)

1. Ukrgiprogidroliz.

APPROVED FOR RELEASE: 09/01/2001 CIA-RDP86-00513R001961310012-7"

"APPROVED FOR RELEASE: 09/01/2001 CIA-RDP86-00513R001961310012-7

VULIKHMAN, V.A.; FINKEL', A.I.; FRIDMAN, M.S.

Automatic control system for continucus neutralization. Avt. i prib. no.4:21-22 O-D '64 (MIRA 18:2)

APPROVED FOR RELEASE: 09/01/2001 CIA-RDP86-00513R001961310012-7"

"APPROVED FOR RELEASE: 09/01/2001 CIA-RDP86-00513R001961310012-7

VULIKHMAN, V.A.

Automatic control of the dissolving of salt. Avtom. i prib. no.4:13-14 O-D '63. (MIRA 16:12)

1. Odesskiy institut "Giproprom."

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"APPROVED FOR RELEASE: 09/01/2001 CIA-RDP86-00513R001961310012-7

VULIKHMAN, V.A.; LANTSMAN, B.A.

Automatic line for the production of feed salt tablets with macro- and micro-additives. Kharch.prom. no.4:13-15 O-D '63. (MIRA 17:1)

APPROVED FOR RELEASE: 09/01/2001 CIA-RDP86-00513R001961310012-7"

"APPROVED FOR RELEASE: 09/01/2001 CIA-RDP86-00513R001961310012-7

VULIKHMAN, V.A., inzh.; MOLODETSKAYA, O.T., inzh.

Automatic control of tank filling and pump interlocking.
Mekh. i avtom. proizv. 17 no.8:15-17 Ag '63. (MIRA 16:10)

APPROVED FOR RELEASE: 09/01/2001 CIA-RDP86-00513R001961310012-7"

"APPROVED FOR RELEASE: 09/01/2001 CIA-RDP86-00513R001961310012-7

TOROKAR, Ya.Kh., inzh.; VULIKHMAN, V.A., inzh.

New technology and automation of kitchen salt production. Khar. prom. no.3:74-76 Jl-S '62. (MIRA 15:8)

1. Diproprom.
(Salt industry) (Automatic control)

APPROVED FOR RELEASE: 09/01/2001 CIA-RDP86-00513R001961310012-7"

"APPROVED FOR RELEASE: 09/01/2001 CIA-RDP86-00513R001961310012-7

VULIKHMAN, V.A., inzh. (Odessa); SHTEYNBERG, P.L., inzh. (Odessa)

Automatic lines for the preparation of concentrated dry food for infant feeding. Khar.prom. no.2:11-13 Ap-Je '62. (MIRA 16:9)

1. Gosudarstvennyy institut po proyektirovaniyu promyshlennykh predpriyatiy.
(Food, Concentrated) (Assembly-line methods)

APPROVED FOR RELEASE: 09/01/2001 CIA-RDP86-00513R001961310012-7"

"APPROVED FOR RELEASE: 09/01/2001 CIA-RDP86-00513R001961310012-7

VULIS, A.A.; TREKHINA, N.N.; CHERNOV, A.P.

Laws of the propagation of compressible flows. Vest.AN Kazakh.SSR 10 no.9: 76-91 S '53. (MLRA 6:11)

(Aerodynamics) (Gases, Flow of)

APPROVED FOR RELEASE: 09/01/2001 CIA-RDP86-00513R001961310012-7"

"APPROVED FOR RELEASE: 09/01/2001 CIA-RDP86-00513R001961310012-7

VULIS, A.L., inzh.

Modernization of the TIS remote control and signaling device.
Trudy VNIIE no.17:99-120 '63. (MIRA 17:9)

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"APPROVED FOR RELEASE: 09/01/2001 CIA-RDP86-00513R001961310012-7

ACC NR: AP6035701 (A,N) SOURCE CODE: UR/0413/66/000/019/0047/0047

INVENTORS: Mityushkin, K. G.; Vulis, A. L.; Borisov, G. M.

ORG: none

TITLE: A remote-control device for a remote signal system. Class 21, No. 186543 [announced by All-Union Scientific Research Institute of Power Engineering and by the Plant "Elektropul't" (Vsesoyuznyy nauchno-issledovatel'skiy institut energetiki i zavod "Elektropul't")]

SOURCE: Izobreteniya, promyshlennyye obraztsy, tovarnyye znaki, no. 19, 1966, 47

TOPIC TAGS: pulse signal, remote control, remote control system

ABSTRACT: This Author Certificate presents a remote-control device for a remote signal system. The device includes line subassemblies, selection units, distributors with magnetic cores (which have windings superimposed on them), and output devices. The design provides for accomplishing the operation of the output devices directly from the distributor pulses. The magnetic cores in the device are made, for example, of cold-rolled electrochemical steel (see Fig. 1). The output windings of the distributors are connected through diode-capacitor circuits with the input of the output devices. To increase the reliability of the device, the selection units are made on the bases of a choke circuit. The selection units are connected in series to the triggering circuit and to the releasing circuit of the output devices.

 UDC: 621.398

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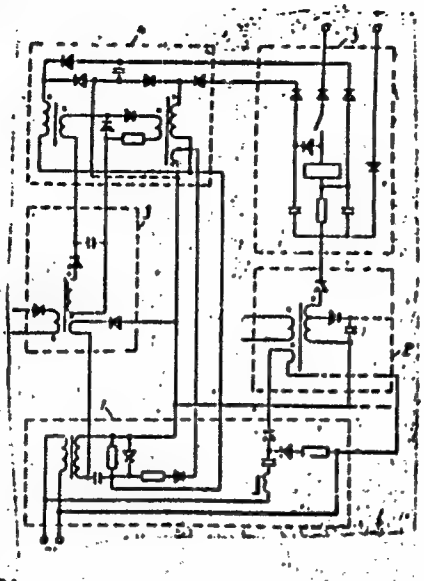

Fig. 1. 1 - cycle pulse shaper; 2 - distributor; 3 - receiver; 4 - selection unit; 5 - output device

Orig. art. has: 1 figure.

SUB CODE: 09/ /13/ SUBM DATE: 29Feb64

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"APPROVED FOR RELEASE: 09/01/2001 CIA-RDP86-00513R001961310012-7

NEKRASOV, V.; VULIS, D.

New comprehensive manual on automobile highways. Avt.transp.32 no.4: 39-40 Ap '54. (MLRA 7:6)
(Road construction)

APPROVED FOR RELEASE: 09/01/2001 CIA-RDP86-00513R001961310012-7"

"APPROVED FOR RELEASE: 09/01/2001 CIA-RDP86-00513R001961310012-7

VULIS, D., inzh.

Traffic capacity of suburban highways. Avt.dor. 21 no.9:19-22 S '58. (MIRA 11:11)
(Traffic engineering) (Roads--Design)

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"APPROVED FOR RELEASE: 09/01/2001 CIA-RDP86-00513R001961310012-7

VULIS, D.

VULIS, D., inzh.

"Roads on sandy soils" by S.A. Treskinskii. Reviewed by D. Vulis.
Avt.dor. 20 no.11(181):32-3 of cover N '57. (MIRA 10:12)
(Roads--Design)

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"APPROVED FOR RELEASE: 09/01/2001 CIA-RDP86-00513R001961310012-7

VULIS, D., inzh.

Some problems in designing highways. Avt.dor. 24 no.12:22-24 D '61. (MIRA 14:12)
(Roads--Design)

APPROVED FOR RELEASE: 09/01/2001 CIA-RDP86-00513R001961310012-7"

"APPROVED FOR RELEASE: 09/01/2001 CIA-RDP86-00513R001961310012-7

VULIS, D.A., inzh.

By-roads and belt-line highways; technical and economic substantiation. Avt. dor. 28 no.2:25-26 F '65. (MIRA 18:6)

APPROVED FOR RELEASE: 09/01/2001 CIA-RDP86-00513R001961310012-7"

"APPROVED FOR RELEASE: 09/01/2001 CIA-RDP86-00513R001961310012-7

VULIS, D.A., inzh.

Statistical prognoses about automotive traffic patterns. Avt. dor. 22 no.6:19-20 Je '59. (MIRA 12:9)
(Traffic engineering)

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"APPROVED FOR RELEASE: 09/01/2001 CIA-RDP86-00513R001961310012-7

D.A.

VULIS, D.A., inzh.

Vertical concave curves. Avt. dor. 21 no.1:18-20 Ja '58. (MIRA 11:1)
(Roads--Tables, calculations, etc.)

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"APPROVED FOR RELEASE: 09/01/2001 CIA-RDP86-00513R001961310012-7

S/264/62/000/006/007/008
I064/I242

AUTHORS: Vulis, D.A. and Flyakh, V.S.

TITLE: Helicopters in road survey

PERIODICAL: Referativnyy zhurnal, Vozdushnyy transport. Svodnyy tom. no.6A, 1962, 31-32, abstract 6A201. (Automob. dorogi, no.10, 1961, 16-17)

TEXT: Helicopters are utilized mainly in underpopulated and hardly accessible regions of the USSR, for various research projects and particularly for air reconnaissance in road surveying. Preliminary surveys carried out by helicopter include general estimate of the local geological and hydrological conditions; determination of competing variables of the general route direction; investigation of the region along mountain ridges in order to choose the most suitable saddles and approaches to passes; investigation of narrow river valleys and mountain canyons in order to decide on route locations on the one bank or the other; investigation of rivers and swamps; deciphering of geological details in districts with complicat-

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S/264/62/000/006/007/008
I064/I242

Helicopters in road survey

ed geological conditions; searching and aerial reconnaissance of sources of road-building materials; aerial photography and electromagnetic and other special technical aerial surveys. The most common helicopters for road prospecting are the МИ -1 (MI-1); the МИ -4 (MI-4) and the ЯК - 24 (YaK - 24) and the light twin-propeller KAMOV helicopter.

[Abstracter's note: Complete translation.]

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VULIS, D.A., inzhener.

Electric lighting of the automobile highway around Moscow. Avt. dor. 20 no.5:31 My '57. (MIRA 10:8)
(Moscow Province--Roadside improvement)
(Moscow Province--Street lighting)

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"APPROVED FOR RELEASE: 09/01/2001 CIA-RDP86-00513R001961310012-7

VULIS, D.A., inzh.; FIYAKH, V.S.

Helicopters in road surveys. Avt. dor. 24 no.10:16-17 O '61. (MIRA 14:11)

(Roads--Surveying) (Helicopters)

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"APPROVED FOR RELEASE: 09/01/2001 CIA-RDP86-00513R001961310012-7

VULIS, I.L.

Statistical estimation of the errors connected with the linearization of the vorticity equation. Meteor. i gidrol. no.5:20-27 My '64. (MIRA 17:6)

1. Glavnaya geofizicheskaya observatoriya imeni A.I. Voyeykova.

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"APPROVED FOR RELEASE: 09/01/2001 CIA-RDP86-00513R001961310012-7

ACCESSION NR: AP4014030 S/0049/64/000/001/0124/0135

AUTHORS: Yudin, M. I.; Vulis, I. L.

TITLE: Application of statistical methods to the investigation of the finite difference structure balance equation

SOURCE: AN SSSR. Izv. Seriya geofizicheskaya, no. 1, 1964, 124-135

TOPIC TAGS: statistical method, finite difference, structure balance equation, finite difference equation, spectral density, error density, arithmetic mean, geopotential field, wind field

ABSTRACT: Starting from some results concerning the theory for the function of a random variable and from data on the statistical structure of the wind field and the geopotential field, the authors have determined the mean arithmetic value and the spectral density of errors associated with a finite-difference approximation of the balance equation. They point out the form of a difference equation that is distinguished by relatively small error. They conclude that the proposed method may have comparatively more general significance during analysis of many natural processes for which the statistical characteristics of the investigated

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ACCESSION NR: AP4014030

fields are known (structural or correlation functions) and which are defined by equations of mathematical physics. Orig. art. has: 4 figures, 3 tables, and 34 formulas.

ASSOCIATION: Glavnaya Geofizicheskaya observatoriya im. A. I. Voyeykova (Main Geophysical Observatory)

SUBMITTED: 23Apr63 DATE ACQ: 14Feb64 ENCL: 00

SUB CODE: AS NO REF SOV: 009 OTHER: 003

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"APPROVED FOR RELEASE: 09/01/2001 CIA-RDP86-00513R001961310012-7

VULIS, I. L.; RUKHOVETS, L. V.; YUDIN, M. I. (Leningrad)

"A statistical approach to the problem of integration of the equations of atmosphere dynamic"

report presented at the 2nd All-Union Congress on Theoretical and Applied Mechanics, Moscow, 29 Jan - 5 Feb 1964.

APPROVED FOR RELEASE: 09/01/2001 CIA-RDP86-00513R001961310012-7"

"APPROVED FOR RELEASE: 09/01/2001 CIA-RDP86-00513R001961310012-7

YUDIN, M.I.; VULIS, I.L.

Use of statistical methods in studying the finite-difference structure of the balance equation. Dokl. AN SSSR 153 no.5: 1067-1070 D '63. (MIRA 17:1)

1. Glavnaya geofizicheskaya observatoriya im. A.I. Voyeykova. Predstavleno akademikom A.A. Dorodnitsynym.

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"APPROVED FOR RELEASE: 09/01/2001 CIA-RDP86-00513R001961310012-7

VULIS, I.L.

Stability study based on initial data of the solution of the finite-difference vortex equation for a barotropic model. Trudy GGO no.143:138-146 '63. (MIRA 17:2)

APPROVED FOR RELEASE: 09/01/2001 CIA-RDP86-00513R001961310012-7"

"APPROVED FOR RELEASE: 09/01/2001 CIA-RDP86-00513R001961310012-7

YUDIN, M.I.; VULIS, I.L.

Application of statistical methods to the study of the finite-difference structure of the balance equation. Izv. AN SSSR. Ser. geofiz. no.1:124-135 Ja'64. (MIRA 17:2)

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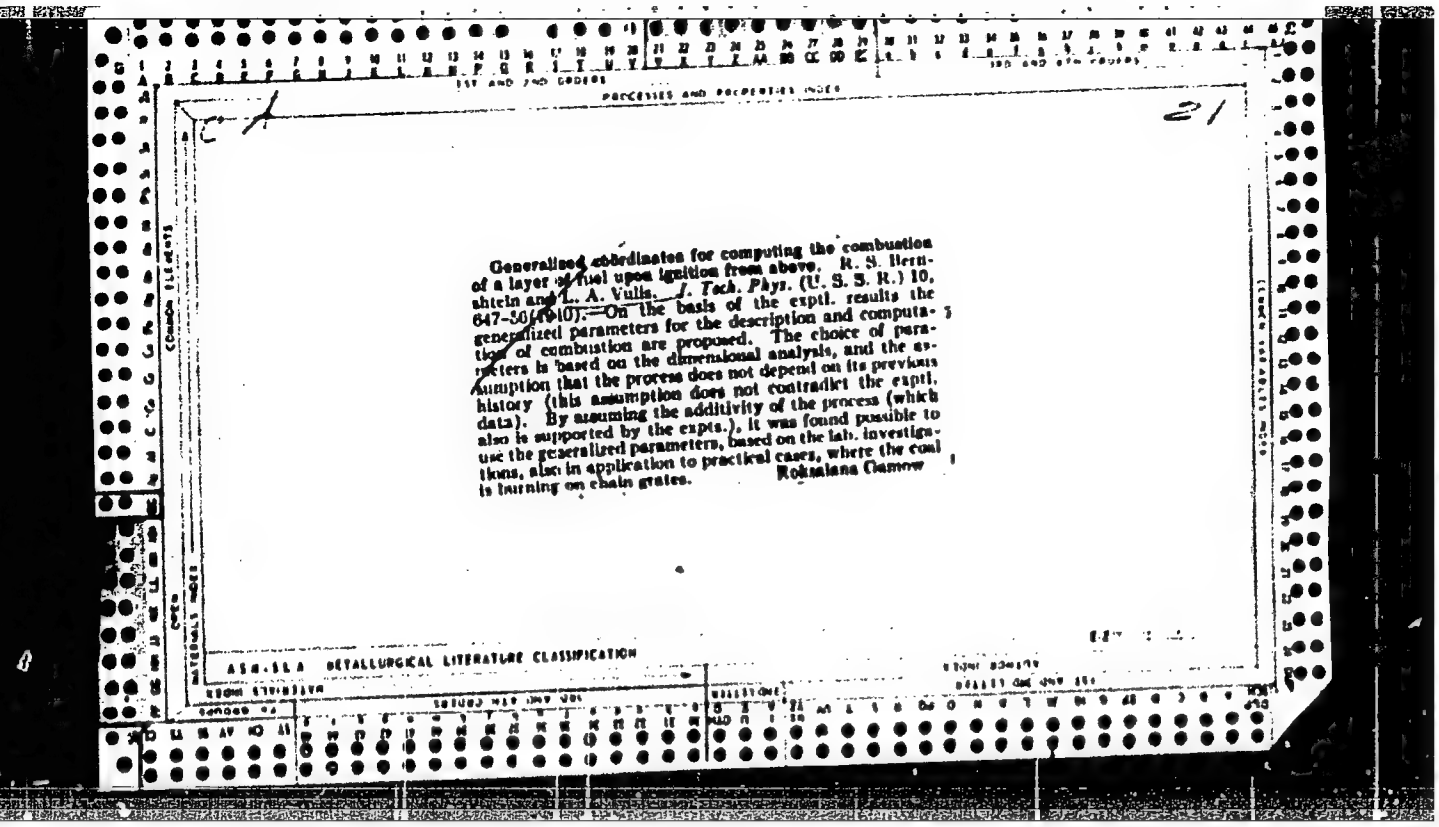

Generalized coördinates for computing the combustion of a layer of fuel upon ignition from above. R. S. Bernshtein and L. A. Vulis. *J. Tech. Phys.* (U. S. S. R.) 10, 647–50(1940). On the basis of the expti. results the generalized parameters for the description and computation of combustion are proposed. The choice of parameters is based on the dimensional analysis, and the assumption that the process does not depend on its previous history (this assumption does not contradict the expti. data). By assuming the additivity of the process (which also is supported by the expts.), it was found possible to use the generalized parameters, based on the lab. investigations, also in application to practical cases, where the coal is burning on chain grates. Roksalana Ganow

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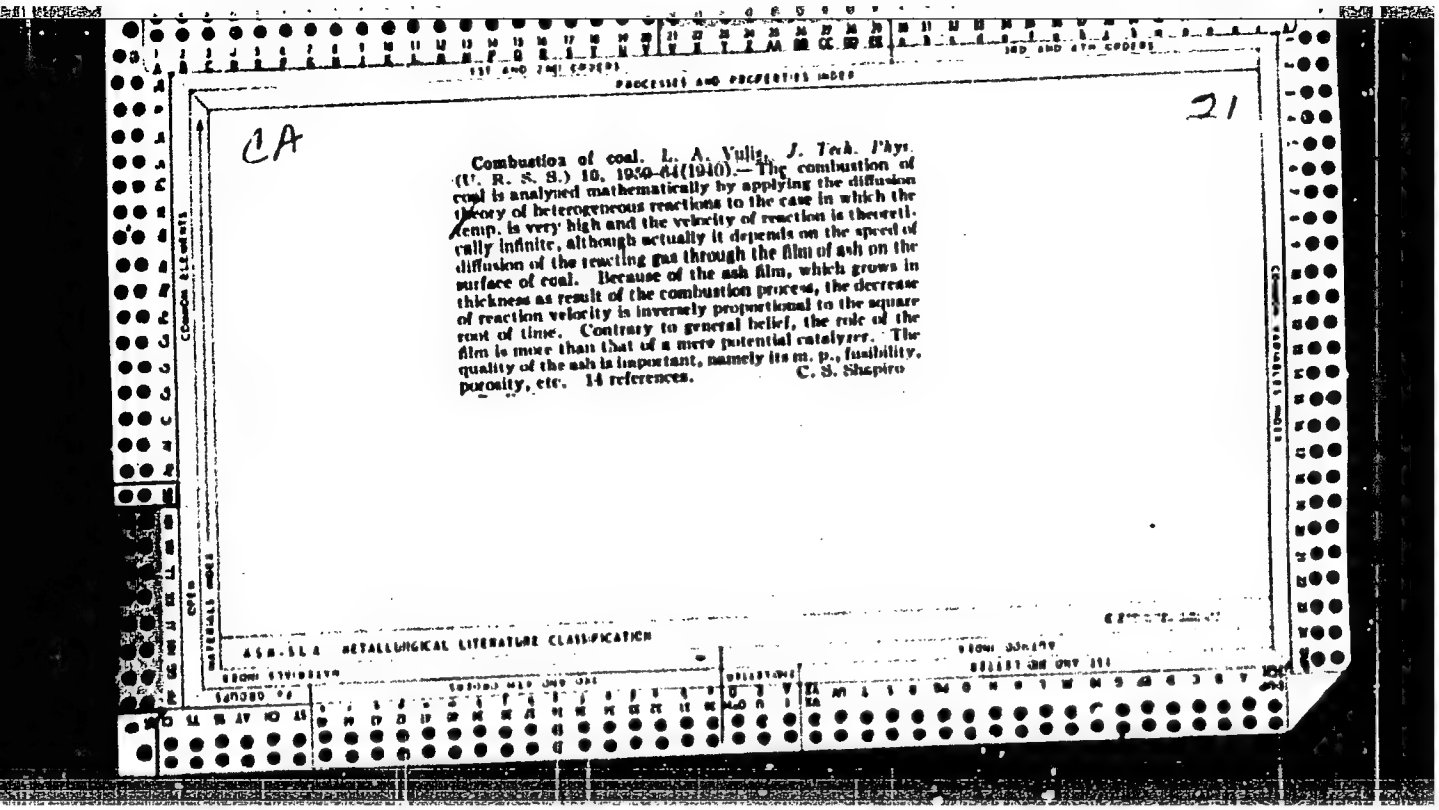

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CA

Combustion of coal. L. A. Yulis. *J. Tech. Phys.* (U. R. S. S.) 10, 1930–44(1940).—The combustion of coal is analyzed mathematically by applying the diffusion theory of heterogeneous reactions to the case in which the temp. is very high and the velocity of reaction is theoretically infinite, although actually it depends on the speed of diffusion of the reacting gas through the film of ash on the surface of coal. Because of the ash film, which grows in thickness as result of the combustion process, the decrease of reaction velocity is inversely proportional to the square root of time. Contrary to general belief, the role of the film is more than that of a mere potential catalyzer. The quality of the ash is important, namely its m. p., fusibility, porosity, etc. 14 references.

C. S. Shapiro

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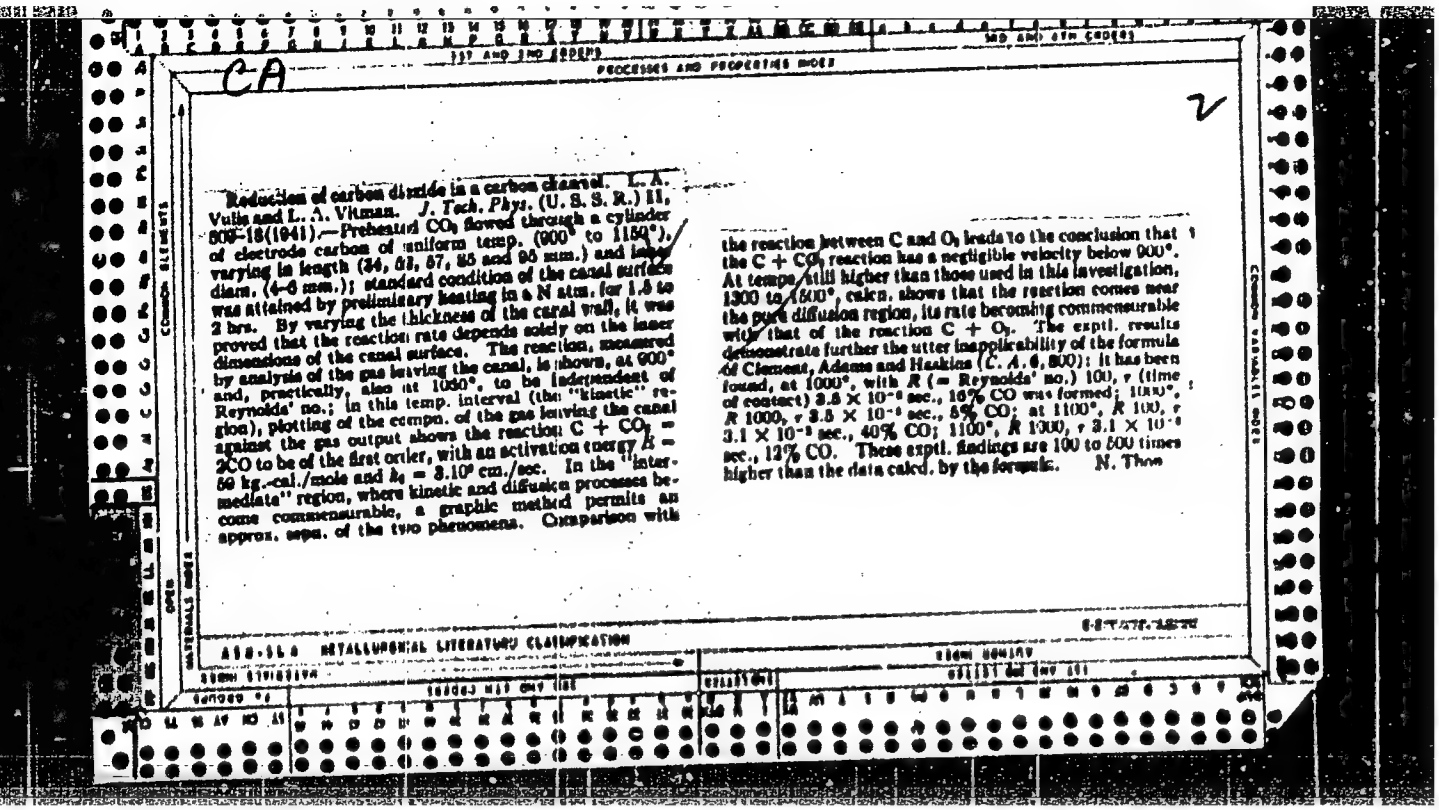

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V

Reduction of carbon dioxide in a carbon channel. L. A. Vulis and L. A. Vitman. *J. Tech. Phys.* (U. S. S. R.) 11, 509–18(1941).—Preheated CO_2 flowed through a cylinder of electrode carbon of uniform temp. (900° to 1150°), varying in length (34, 61, 87, 85 and 95 mm.) and inner diam. (4–6 mm.); standard condition of the canal surface was attained by preliminary heating in a N atm. for 1.5 to 2 hrs. By varying the thickness of the canal wall, it was proved that the reaction rate depends solely on the inner dimensions of the canal surface. The reaction, measured by analysis of the gas leaving the canal, is shown, at 900° and, practically, also at 1050°, to be independent of Reynolds' no.; in this temp. interval (the "kinetic" region), plotting of the compn. of the gas leaving the canal against the gas output shows the reaction: $C + CO_2 = 2CO$ to be of the first order, with an activation energy $K = 50$ kg.-cal./mole and $k_0 = 3.10^9$ cm./sec. In the "intermediate" region, where kinetic and diffusion processes become commensurable, a graphic method permits an approx. sepn. of the two phenomena. Comparison with the reaction between C and O_2 leads to the conclusion that the $C + CO_2$ reaction has a negligible velocity below 900°. At temps. still higher than those used in this investigation, 1300 to 1500°, calcn. shows that the reaction comes near the pure diffusion region, its rate becoming commensurable with that of the reaction $C + O_2$. The expti. results demonstrate further the utter inapplicability of the formula of Clement, Adams and Haskins (*C. A.* 6, 800): it has been found, at 1000°, with R (= Reynolds' no.) 100, τ (time of contact) 2.5×10^{-3} sec., 16% CO was formed; 1050°, R 1000, τ 2.5×10^{-3} sec., 5% CO; at 1100°, R 100, τ 3.1×10^{-3} sec., 40% CO; 1100°, R 1000, τ 3.1×10^{-3} sec., 12% CO. These expti. findings are 100 to 500 times higher than the data calcd. by the formula. N. Thon

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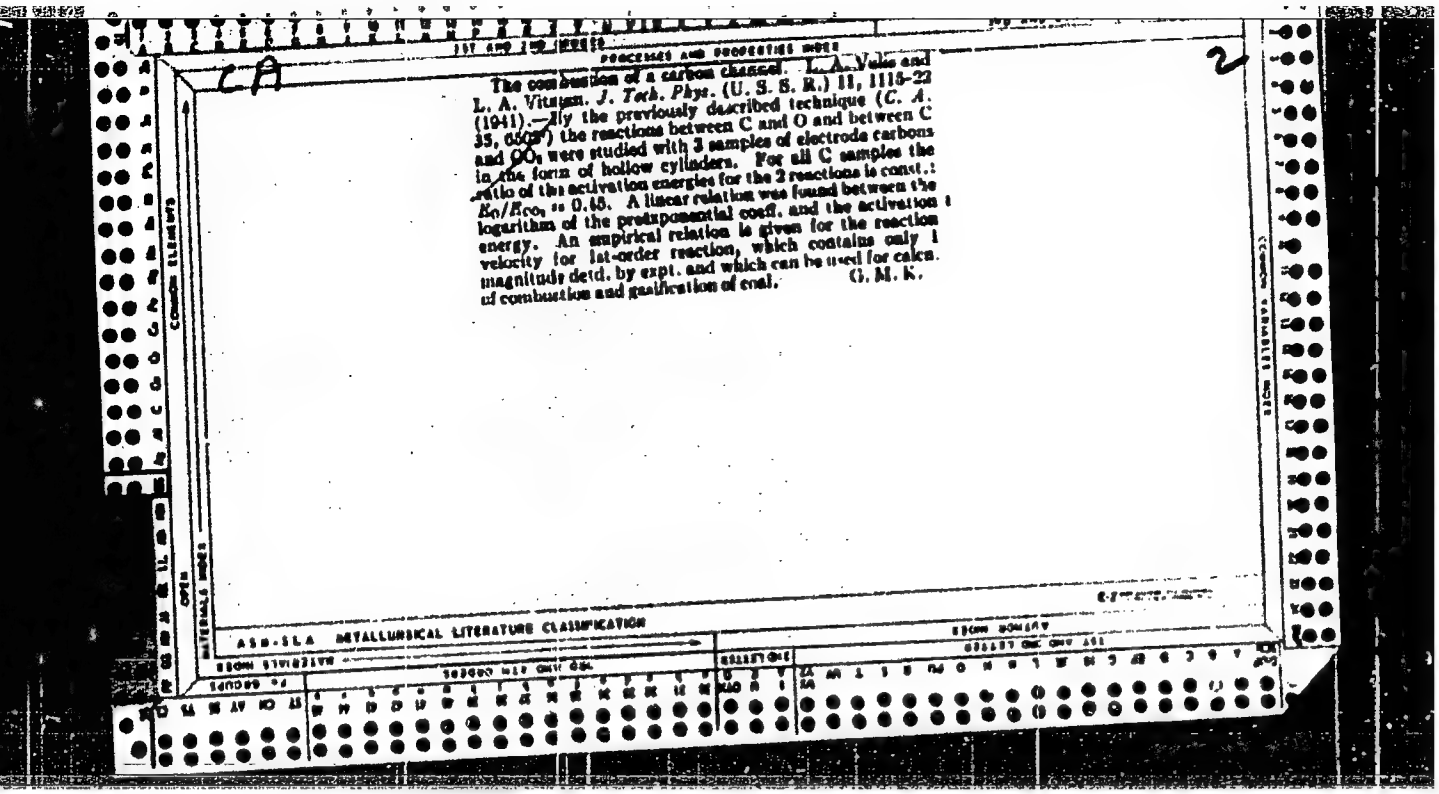

CA

2

The combustion of a carbon channel. L. A. Vulis and L. A. Vitman. *J. Tech. Phys.* (U. S. S. R.) 11, 1113-22 (1941).—By the previously described technique (*C. A.* 35, 6503⁹) the reactions between C and O and between C and CO_2 were studied with 3 samples of electrode carbons in the form of hollow cylinders. For all C samples the ratio of the activation energies for the 2 reactions is const.: $E_O/E_{CO_2} = 0.65$. A linear relation was found between the logarithm of the preexponential coeff. and the activation energy. An empirical relation is given for the reaction velocity for 1st-order reaction, which contains only 1 magnitude detd. by expt. and which can be used for calcn. of combustion and gasification of coal. G. M. K.

ASB-SLA METALLURGICAL LITERATURE CLASSIFICATION

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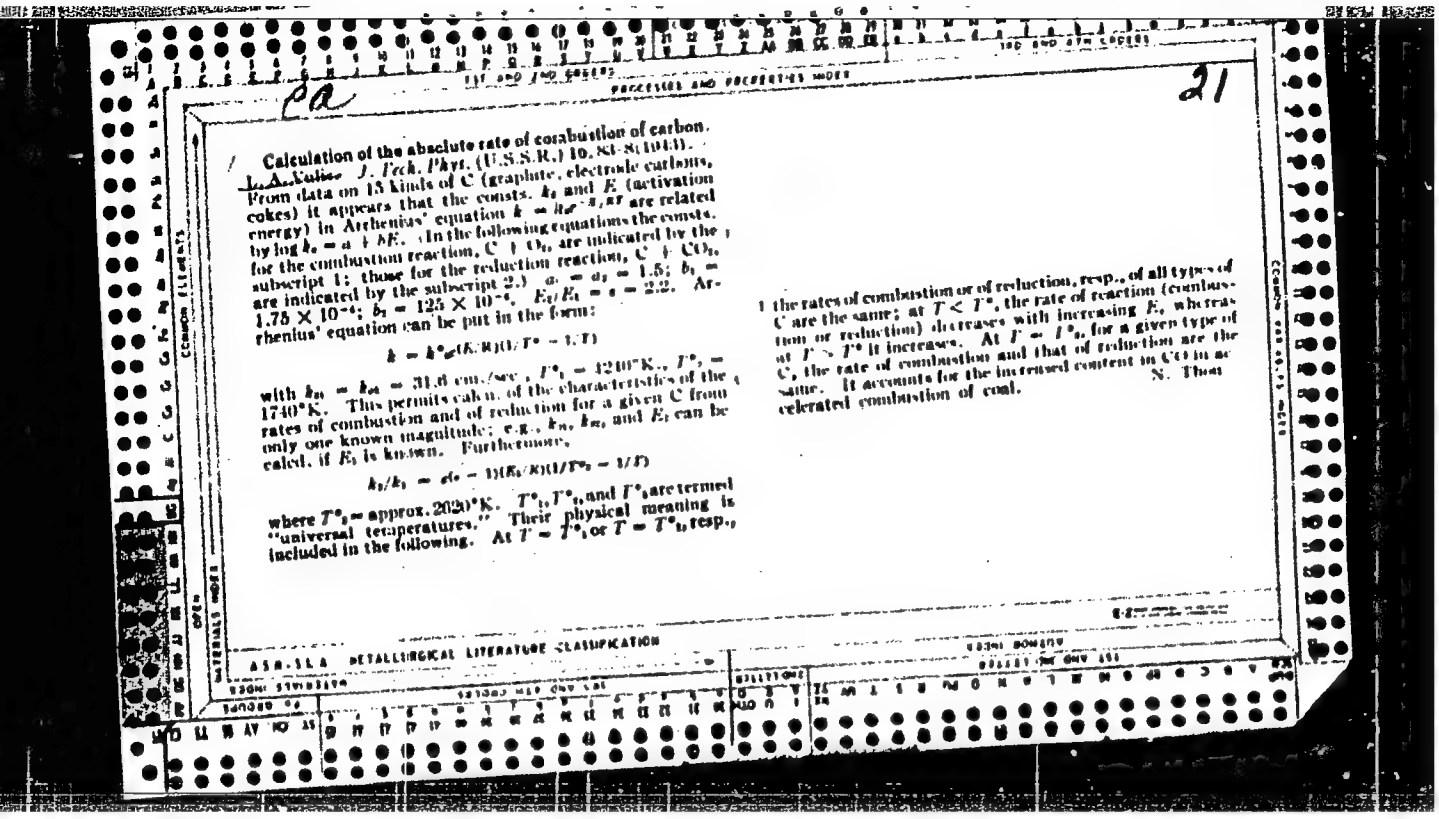

Calculation of the absolute rate of combustion of carbon.
L. A. Kulsky. *J. Tech. Phys.* (U.S.S.R.) 10, 831-8(1940).
From data on 15 kinds of C (graphite, electrode carbons, cokes) it appears that the consts. k_0 and E (activation energy) in Arrhenius' equation $k = k_0 e^{-E/RT}$ are related by $\log k_0 = a + bE$. (In the following equations the consts. for the combustion reaction, $C + O_2$, are indicated by the subscript 1; those for the reduction reaction, $C + CO_2$, are indicated by the subscript 2.) $a_1 = a_2 = 1.5$; $b_1 = 1.75 \times 10^{-4}$; $b_2 = 125 \times 10^{-4}$. $E_2/E_1 = \epsilon = 2.2$. Arrhenius' equation can be put in the form:

$$k = k^{\circ}e^{(E_1/R)(1/T^{\circ} - 1/T)}$$

with $k_{01} = k_{02} = 31.6$ cm./sec.; $T^{\circ}_1 = 1240°K.$, $T^{\circ}_2 = 1740°K.$ This permits calcn. of the characteristics of the rates of combustion and of reduction for a given C from only one known magnitude; e.g., k_{01}, k_{02} and E_2 can be calcd. if E_1 is known. Furthermore,

$$k_2/k_1 = e^{(\epsilon - 1)(E_1/R)(1/T^{\circ}_0 - 1/T)}$$

where T°_0 = approx. 2020°K. T°_1, T°_2, and T°_0 are termed "universal temperatures." Their physical meaning is included in the following. At $T = T^{\circ}_1$ or $T = T^{\circ}_2$, resp., the rates of combustion or of reduction, resp., of all types of C are the same; at $T < T^{\circ}$, the rate of reaction (combustion or reduction) decreases with increasing E, whereas at $T > T^{\circ}$ it increases. At $T = T^{\circ}_0$, for a given type of C, the rate of combustion and that of reduction are the same. It accounts for the increased content in CO in accelerated combustion of coal.

N. Thon

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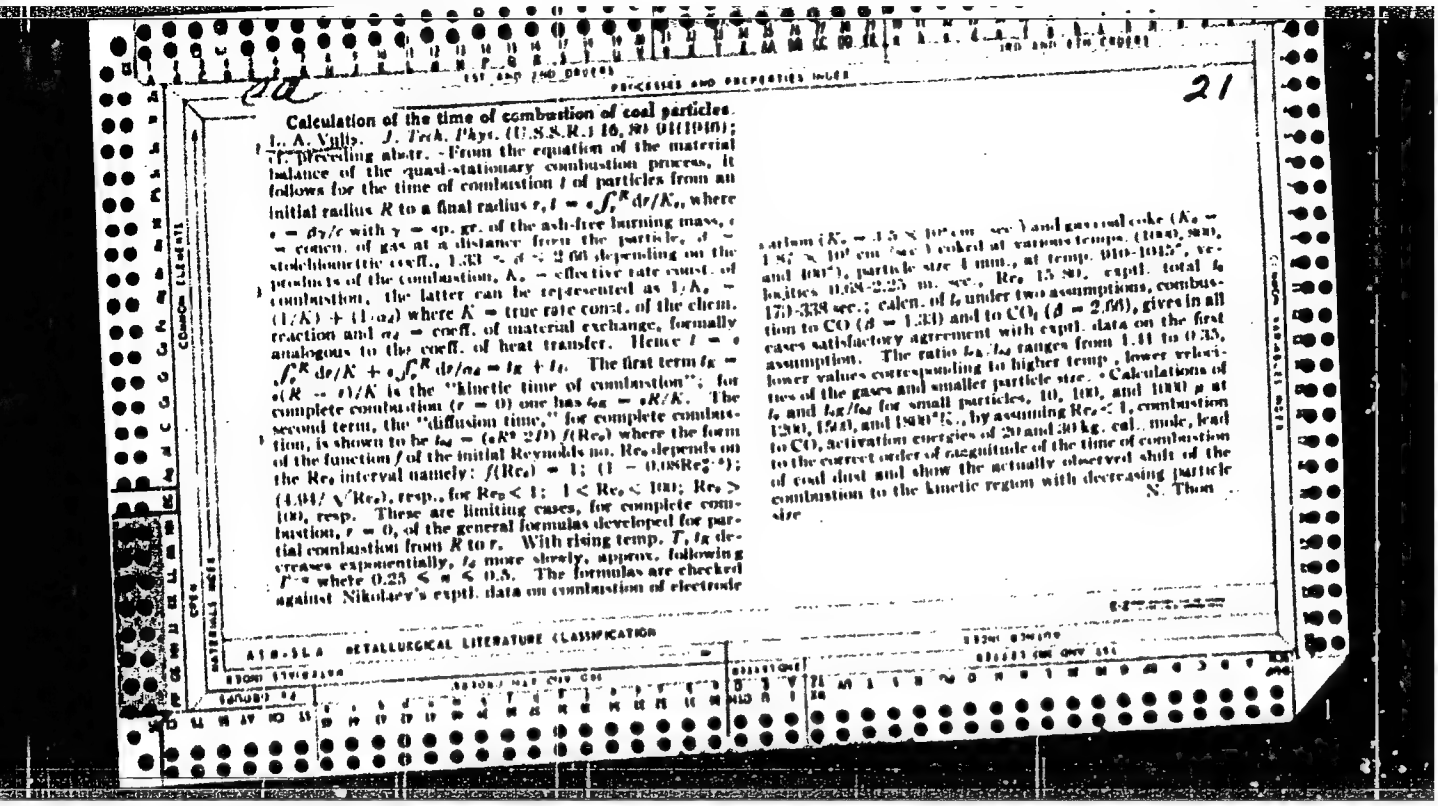

21

Calculation of the time of combustion of coal particles. L. A. Vulis. *J. Tech. Phys.* (U.S.S.R.) 16, 80 9(1946); cf. preceding abstr. - From the equation of the material balance of the quasi-stationary combustion process, it follows for the time of combustion t of particles from an initial radius R to a final radius r, $t = \epsilon \int_r^R dr/K_r$, where $\epsilon = \delta\gamma/c$ with γ = sp. gr. of the ash-free burning mass, c = concn. of gas at a distance from the particle, δ = stoichiometric coeff., $1.33 < \delta < 2.66$ depending on the products of the combustion, K_r = effective rate const. of combustion, the latter can be represented as $1/K_r = (1/K) + (1/\alpha_d)$ where K = true rate const. of the chem. reaction and α_d = coeff. of material exchange, formally analogous to the coeff. of heat transfer. Hence $t = \epsilon \int_r^R dr/K + \epsilon \int_r^R dr/\alpha_d = t_K + t_D$. The first term $t_K = \epsilon(R - r)/K$ is the "kinetic time of combustion"; for complete combustion ($r = 0$) one has $t_K = \epsilon R/K$. The second term, the "diffusion time," for complete combustion, is shown to be $t_D = (\epsilon R^2/2D) f(\mathrm{Re}_0)$ where the form of the function f of the initial Reynolds no. Re_0 depends on the Re_0 interval namely: $f(\mathrm{Re}_0) = 1$; $(1 - 0.08\mathrm{Re}_0^{0.5})$; $(4.04/\sqrt{\mathrm{Re}_0})$, resp., for $\mathrm{Re}_0 < 1$; $1 < \mathrm{Re}_0 < 100$; $\mathrm{Re}_0 > 100$, resp. These are limiting cases, for complete combustion, $r = 0$, of the general formulas developed for partial combustion from R to r. With rising temp. T, t_K decreases exponentially, t_D more slowly, approx. following T^{-n} where $0.25 \leq n \leq 0.5$. The formulas are checked against Nikolaev's exptl. data on combustion of electrode

[illegible] ation ($K_0 = 4.5 \times 10^{5}$ cm./sec.) and gas-coal coke ($K_0 = 1.8 \times 10^{5}$ cm./sec.) coked at various temps. (1100, 900, and 600°), particle size 1 mm., at temp. 910-1045°, velocities 0.68-2.25 m./sec., Re_0 15-80, exptl. total t_0 175-338 sec.; calcn. of t_0 under two assumptions, combustion to CO ($\delta = 1.33$) and to CO_2 ($\delta = 2.66$), gives in all cases satisfactory agreement with exptl. data on the first assumption. The ratio t_K/t_D ranges from 1.41 to 0.35, lower values corresponding to higher temp., lower velocities of the gases and smaller particle size. Calculations of t_0 and t_K/t_D for small particles, 10, 100, and 1000 μ at 1200, 1500, and 1800°K., by assuming $\mathrm{Re}_0 < 1$, combustion to CO, activation energies of 20 and 30 kg. cal./mole, lead to the correct order of magnitude of the time of combustion of coal dust and show the actually observed shift of the combustion to the kinetic region with decreasing particle size. N. Thon

A10-51A METALLURGICAL LITERATURE CLASSIFICATION

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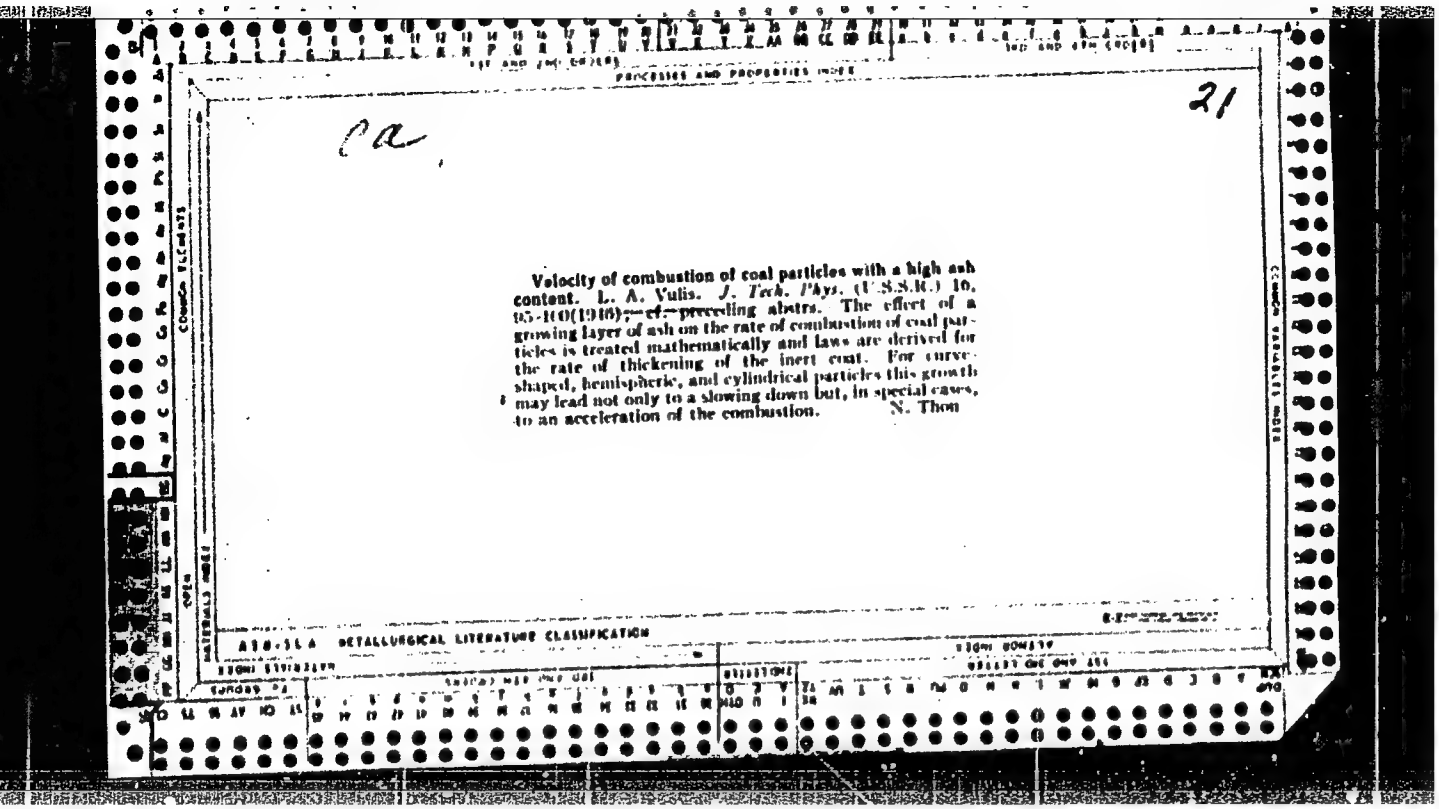

21

Ca

Velocity of combustion of coal particles with a high ash content. L. A. Vulis. *J. Tech. Phys.* (U.S.S.R.) 16, 95-100(1946); cf. preceding abstr. The effect of a growing layer of ash on the rate of combustion of coal particles is treated mathematically and laws are derived for the rate of thickening of the inert coat. For curve-shaped, hemispheric, and cylindrical particles this growth may lead not only to a slowing down but, in special cases, to an acceleration of the combustion. N. Thon

AID-SLA METALLURGICAL LITERATURE CLASSIFICATION

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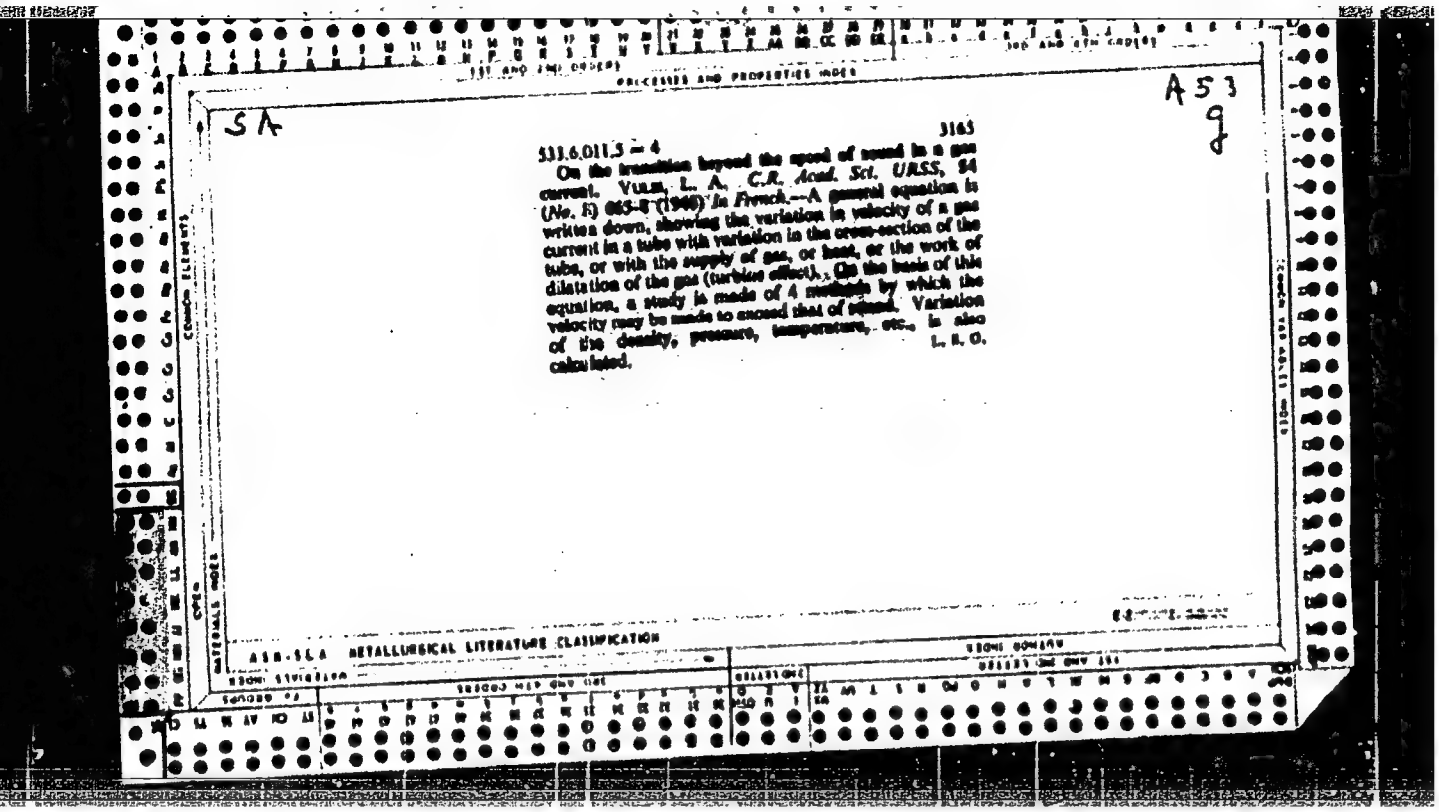

SA

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533.6.011.5 — 4

On the transition beyond the speed of sound in a gas current. VULIS, L. A. *C.R. Acad. Sci. URSS*, 54 (No. 8) 685-8 (1946) *In French.*—A general equation is written down, showing the variation in velocity of a gas current in a tube with variation in the cross-section of the tube, or with the supply of gas, or heat, or the work of dilatation of the gas (turbine effect). On the basis of this equation, a study is made of 4 methods by which the velocity may be made to exceed that of sound. Variation of the density, pressure, temperature, etc., is also calculated. L. R. O.

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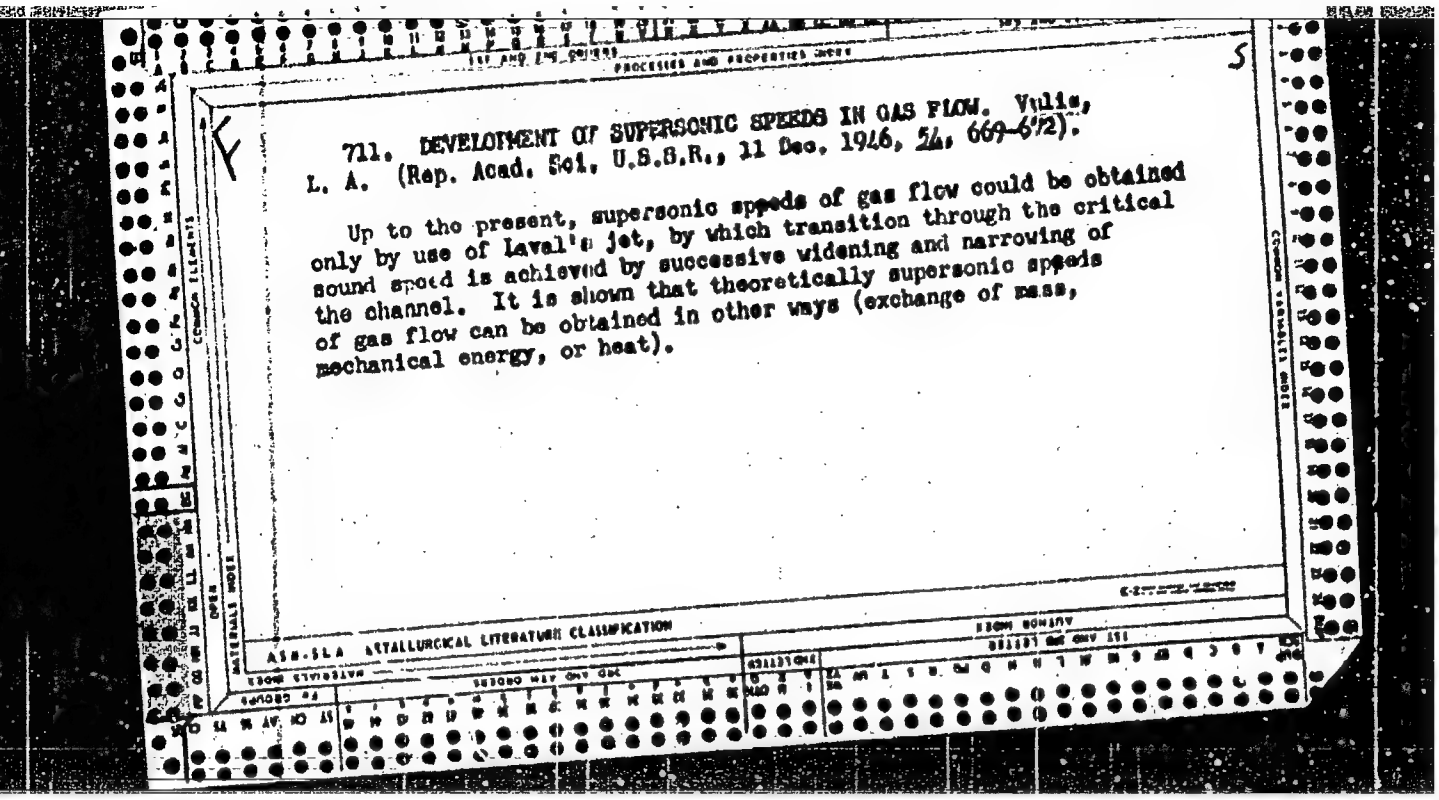

711. DEVELOPMENT OF SUPERSONIC SPEEDS IN GAS FLOW. Vulis, L. A. (Rep. Acad. Sci. U.S.S.R., 11 Dec. 1946, 54, 669-672).

Up to the present, supersonic speeds of gas flow could be obtained only by use of Laval's jet, by which transition through the critical sound speed is achieved by successive widening and narrowing of the channel. It is shown that theoretically supersonic speeds of gas flow can be obtained in other ways (exchange of mass, mechanical energy, or heat).

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VULIS, L. A.

O vliianii treniia na perekhod cherez skorost' zvuka. (Akademiia Nauk SSSR. Doklady. Novaia seriia, 1946, v. 54, no. 9, p. 773-775)

Title tr.: Effect of friction on crossing the sonic barrier.

Also published in French in Comptes rendus de l'Academie des Sciences de l'URSS. Nouvelle serie, 1946, v. 54, no. 9, p. 769-771 (Q60-A52)

AS262.S3663 v. 54

SO: Aeronautical Sciences and Aviation in the Soviet Union, Library of Congress, 1955

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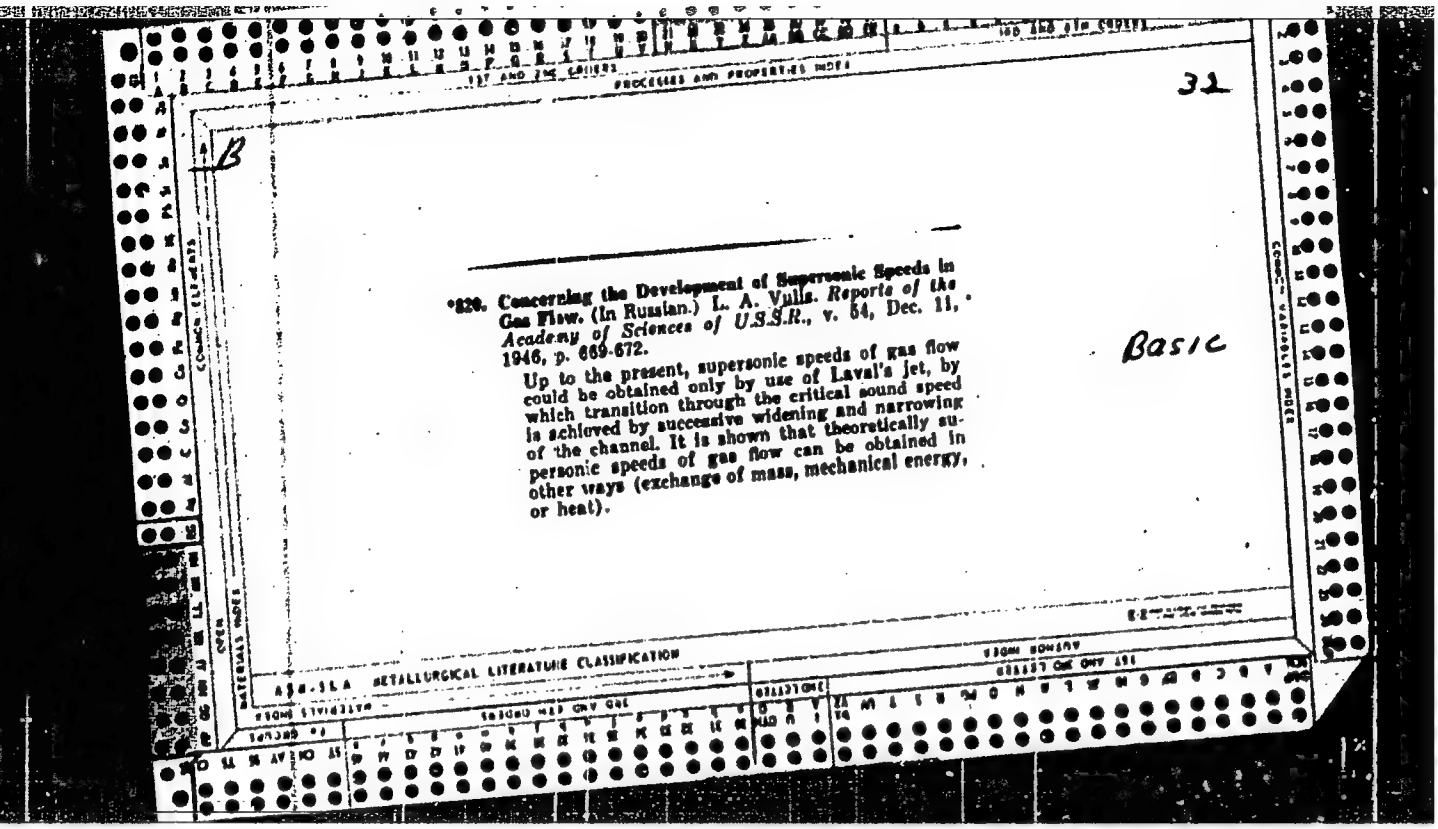

32

B

*820. **Concerning the Development of Supersonic Speeds in Gas Flow.** (In Russian.) L. A. Vulis. *Reports of the Academy of Sciences of U.S.S.R.*, v. 54, Dec. 11, 1946, p. 669-672.

Up to the present, supersonic speeds of gas flow could be obtained only by use of Laval's jet, by which transition through the critical sound speed is achieved by successive widening and narrowing of the channel. It is shown that theoretically supersonic speeds of gas flow can be obtained in other ways (exchange of mass, mechanical energy, or heat).

Basic

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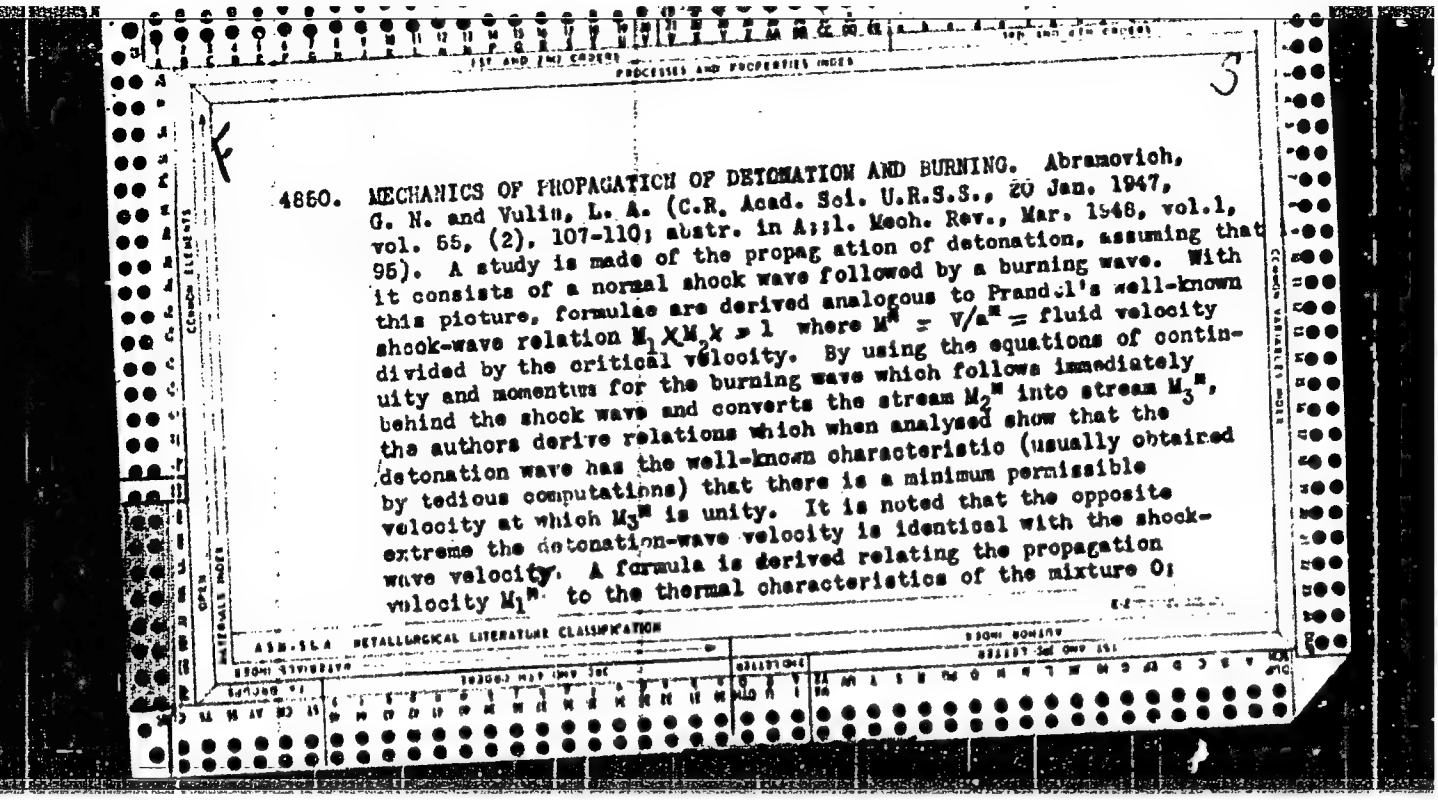

4860. MECHANICS OF PROPAGATION OF DETONATION AND BURNING. Abramovich, G. N. and Vulin, L. A. (C.R. Acad. Sci. U.R.S.S., 20 Jan. 1947, vol. 55, (2), 107-110; abstr. in Appl. Mech. Rev., Mar. 1948, vol.1, 95). A study is made of the propagation of detonation, assuming that it consists of a normal shock wave followed by a burning wave. With this picture, formulae are derived analogous to Prandtl's well-known shock-wave relation $M_1 \times M_2 k = 1$ where $M^M = V/a^M$ = fluid velocity divided by the critical velocity. By using the equations of continuity and momentum for the burning wave which follows immediately behind the shock wave and converts the stream M_2^M into stream M_3^M, the authors derive relations which when analysed show that the detonation wave has the well-known characteristic (usually obtained by tedious computations) that there is a minimum permissible velocity at which M_3^M is unity. It is noted that the opposite extreme the detonation-wave velocity is identical with the shock-wave velocity. A formula is derived relating the propagation velocity M_1^M to the thermal characteristics of the mixture O;

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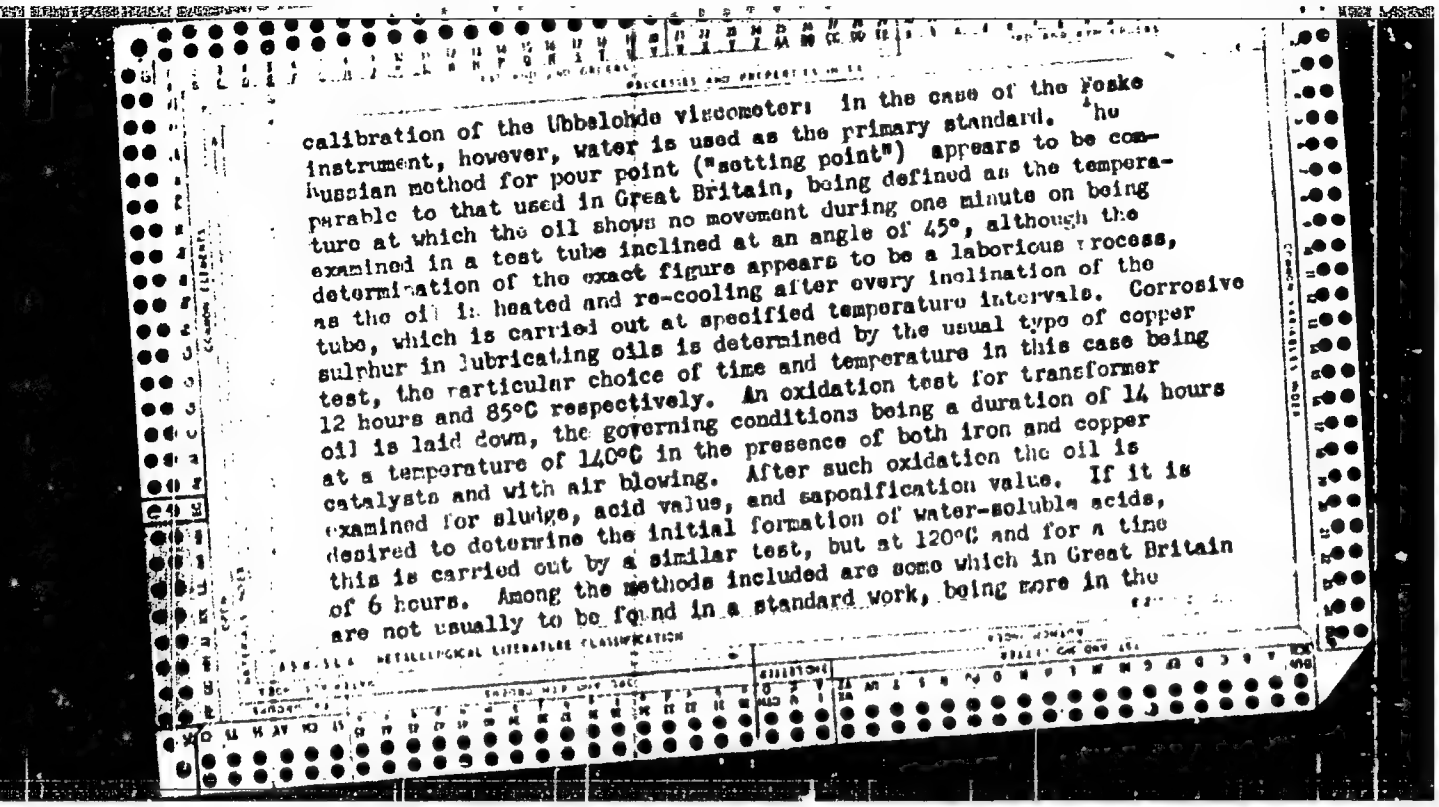

calibration of the Ubbelohde viscometer; in the case of the Foske instrument, however, water is used as the primary standard. The Russian method for pour point ("setting point") appears to be comparable to that used in Great Britain, being defined as the temperature at which the oil shows no movement during one minute on being examined in a test tube inclined at an angle of 45°, although the determination of the exact figure appears to be a laborious process, as the oil is heated and re-cooling after every inclination of the tube, which is carried out at specified temperature intervals. Corrosive sulphur in lubricating oils is determined by the usual type of copper test, the particular choice of time and temperature in this case being 12 hours and 85°C respectively. An oxidation test for transformer oil is laid down, the governing conditions being a duration of 14 hours at a temperature of 140°C in the presence of both iron and copper catalysts and with air blowing. After such oxidation the oil is examined for sludge, acid value, and saponification value. If it is desired to determine the initial formation of water-soluble acids, this is carried out by a similar test, but at 120°C and for a time of 6 hours. Among the methods included are some which in Great Britain are not usually to be found in a standard work, being more in the

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nature of tests carried out in a works control laboratory rather than on finished products, e.g. after refining of the solvent in oils refined by the furfural, nitrobenzol, and phenol processes. The inclusion of tests of this type is perhaps due to the fact that whereas in the U.K. and U.S.A. their choice is left to the individual refiner, the standard methods of test being intended more to ensure that buyers' requirements are determined in a uniform manner, the State operation of all industry in the U.S.S.R. has made it desirable that all producers who are units in a single combine should conform to a uniform works control technique. The section on the examination of greases is fairly comprehensive, and in addition to the usual physical tests such as penetration, drop point, etc., includes numerous methods for the chemical examination of greases, e.g., the determination of free fatty acids, soaps, resin. Tests are laid down both for evaluating the protective action of greases in preventing corrosion and also to ensure that the greases themselves are free from corrosive action. In the section dealing with petroleum by-products the traditional Russian interest in sulphonic and naphthenic acids is evinced by the numerous methods for the examination of these materials. Methods are described for the determination of oil, sulphonic acids, and sulphuric acid in "Kontakt," and also for evaluating the fat-hydrolysing activity of this material. Products dealt with in this section include paraffin wax and bitumen: the setting point of paraffin wax (often referred to as "melting point") is taken as the flat protion of the time-temperature cooling curve. The oil content of paraffin wax is determined by a mechanical expression method. The tests described for bitumen are those usually given in British and American publications; likewise the description if sampling procedure is conventional.

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this formula is said to give values in error by less than two per cent from the more exact formula, which is also derived.

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VULIS, L. A.

O zakone obrashcheniia vozdeistvii v techenii real'nogo gaza. (Akademiia Nauk SSSR. Doklady. Novaia seriia, 1947, v. 56, no. 8, p. 799-801)

Title tr.: The law of physical effects on the character of flow of imperfect gas.

AS262.S3663 v. 56

SO: Aeronautical Sciences and Aviation in the Soviet Union, Library of Congress, 1955

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"APPROVED FOR RELEASE: 09/01/2001 CIA-RDP86-00513R001961310012-7

VULIS, L. A.

Author: Vulis, L. A.

Title: The thermodynamics of gaseous flows. (Termodinamika gazovykh potokov.) 303 p.

City: Moscow

Publisher: State Printing House of Power Engineering Literature

Date: 1950

Available: Library of Congress

Source: Monthly List of Russian Accessions, Vol.3 , No. 7, Page 459

Call No: QC318V8

Subject: 1. Thermodynamics. 2. Gas flow.

Textbook for engineers and students of power, aeronautical and mechanical engineering institutions of higher learning. The thermodynamic theory of one-dimensional fixed gas flow is described. Special attention is given to critical speeds and the formation of shocks.

Reviewed by G. A. Varshavskiy in Sovetskaya kniga, 1951, No. 7, p. 35-36.

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"APPROVED FOR RELEASE: 09/01/2001 CIA-RDP86-00513R001961310012-7

VULIS, L. A., KLINGER, V. G.;

"Equilibrium Temperature of a Body in Gaseous Flow," Zhurnal Tekhnicheskoi Fiziki, 1950, Vol 20, Nr 1, pp 97-109.

"Problem of Calculation and Modeling of Radiating Heat Exchange, Zhurnal Tekhnicheskoi Fiziki, 1954, Vol 24, Nr 11, pp 2070-2078, with V. G. KLINGER.

Affiliations: 1. Power Engineering Inst. im G. M. Krzhizhanovskiy. 2. Head of a Chair, Kazakh State Univ. im S. M. Kirov.

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VULIS, L. A., TEREKHINA, N. N., CHERKEZ, A. F.

"Regularities on the Distribution of Compressible Streams"
Vestn. AN Kazakh. SSR, No 9, 1953, pp 76-91

The authors present an approximate solution of the problem of the distribution of a nonisothermal turbulent stream flowing out of a circular aperture into a flooded space. The solution is based on the assumption of similarity of velocity-head fields. Experiments were performed to ascertain the validity of the theoretical results and the data thus obtained coincided closely with the theoretical predictions. (RZhMekh, No 1, 1955)

SO: Sum. 492, 12 May 55

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"APPROVED FOR RELEASE: 09/01/2001 CIA-RDP86-00513R001961310012-7

VULIS, L. A.

USSR/Physics - Gas-Dynamics of Heat Exchange

"Flow of a Viscous Gas in a Cylindrical Pipe in the Presence of Convective Heat Exchange," S. V. Romanenko

DAN SSSR, Vol 91, No 6, pp 1289-1292, 1953

States that M. D. Millionshchik and V. A. Khristianovich, with V. G. Gai'perin and L. A. Simonov, on the basis of the classical hydrodynamic theory of heat exchange (see their Prikladnaya Gazovaya Dinamika (Applied Gas Dynamics). 1948 investigated unidimensional stationary flow of a viscous gas in a cylindrical pipe with technically smooth walls for the case of convective heat exchange and const temp of the wall. Here the author solves this problem under the assumptions but on the basis of a generalized hydrodynamic theory of heat exchange that reflects the peculiarity of high-speed flow. Cites: L. A. Vulis, Termo-dinamika Gazovykh Potikov (Thermodynamics of Gas Flow), 1950; A. A. Gukhman and N. V. Ilyukhin, Osnovy Ucheniya o Teploobmene pri Techenii Gaza s Bol'shoy Skorost'yu (Principles of the Science of Heat Exchange in High-Speed Gas Flow), 1951. Presented by Acad S. A. Khristianovich 3 Jul 53.

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"APPROVED FOR RELEASE: 09/01/2001 CIA-RDP86-00513R001961310012-7

VULIS, L.A.: AVIENYEVSKIY, V.S., redaktor; SKVORTSOV, I.M., tekhnicheskiy redaktor.

[Thermic combustion process] Teplovoi rezhim goreniia. Moskva, Gos. energ. izd-vo, 1954. 287 p. (MLRA 7:7)
(Heat of combustion) (Combustion)

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"APPROVED FOR RELEASE: 09/01/2001 CIA-RDP86-00513R001961310012-7

VULIS, L.A.

Theoretical calculation of muffle burners. Izv.AN Kazakh.SSR.Ser. energ. no.4/5:78-89 '54. (MLRA 9:5)
(Burners) (Combustion)

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"APPROVED FOR RELEASE: 09/01/2001 CIA-RDP86-00513R001961310012-7

VULIS, L.A.

Turbulent gas streams. Izv.AN Kazakh SSR. Ser.energ.no.6:19-27
'54. (Gas flow) (MLRA 9:4)

Kazakhstani resume:

The author suggests a method of solving the problem of a turbulent free stream of low velocity flowing into a submerged space for a significant difference in temperature between the stream and the surrounding medium. He transforms the equation of the boundary layer of the stream into new variables, giving it the formof the relativity averaged values of these new variables. He shows that loss of velocity along the axis of a hot stream is faster, and of a cold stream slower than in an incompressible liquid, which agrees qualitatively with experience. (RZhMekh, No 9, 1955).

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"APPROVED FOR RELEASE: 09/01/2001 CIA-RDP86-00513R001961310012-7

VULIS, L.A.; USTIMENKO, B.P.

Aerodynamic diagram of current in a cyclone chamber. Vest.AN Kazakh. SSR 11 no.4:89-97 Ap '54. (MLRA 7:5)
(Aerodynamics)

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"APPROVED FOR RELEASE: 09/01/2001 CIA-RDP86-00513R001961310012-7

VULIS, L.A.; LEONT'YEVA, T.P.; TONKONOGIY, A.V.

Stabilization of a coal-dust torch. Vest. AN Kazakh.SSR 11 no.5: 54-64 My '54. (MIRA 7:7)
(Combustion)

Considers the question of the possibility of stabilizing a coal-pulverizing jet with the aid of counter currents (aerodynamic stabilization.) The authors feel that a shortcoming of the method of stabilization by poorly streamlined bodies is the fact that the quantity of returnable hot products of combustion remains constant. They suggest using a single counter current whose speed is greater than that of the basic limitless flow. (RZhMekh, No 4, 1955)

Sum 606, 5 Aug 55

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"APPROVED FOR RELEASE: 09/01/2001 CIA-RDP86-00513R001961310012-7

VULIS L. A.

Category : USSR/Optics - Physical Optics K-5

Abs Jour : Ref Zhur - Fizika, No 2, 1957, No 4999

Author : Vulis, L.A., Klinger, V.G.
Title : Concerning the Problem of the Calculation and Simulation of Radiant Heat Exchange.

Orig Pub : Zh. tekhn. fiziki, 1954, 24, No 11, 2070-2078

Abstract : The equations for the radiant heat exchange between gray bodies, separated by a medium that is transparent to rays, are considered. A computation procedure is proposed, based on the direct connection between the intrinsic and resultant radiation. The possibilities of using a light-ray analogue of the radiation heat exchange are evaluated.

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"APPROVED FOR RELEASE: 09/01/2001 CIA-RDP86-00513R001961310012-7

VULIS, L.A.

V 5490. AERODYNAMICS OF CYCLONE FURNACE CHAMBERS. Vulis, L.A. and Ustimenko, B.P. (Teploenergetika (Heat Pr Engng, Moscow), 1954, Vol. 1, (9), 3-10; Energoteckhnik, June 1955, vol. 5, 265-270). The aerodynamics of flow in cyclone furnace chambers, the movement of the jet, experimental data on the turbulent mixing process in the cyclone chamber and the most efficient method of injecting combustion air are studied. A generalized equation for flow in the cyclone is presented. (L). M.F.P.

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VULIS, L. A.

PERIODICAL ABSTRACTS

AID 4172 - P

Sub.: USSR/Engineering

VULIS, L. A., and V. P. KASHKAROV.
O SMESHENII DVUKH ODNORODNYKH POTOKOV VYAZKOY ZHIDKOSTI (On mixing two homogeneous flows of viscous liquids). Teploenergetika, no. 2, F 1955: 41-46.

A study on laminary and turbulent flows of two parallel or opposite flows of viscous liquids. A mathematical analysis leads to a formula derived from the analysis of the asymptotic layer. The velocity and temperature distribution is presented. Five diagrams.

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"APPROVED FOR RELEASE: 09/01/2001 CIA-RDP86-00513R001961310012-7

VULIS, L.A.; LEONT'YEVA, T.P.

Parallel and counter turbulent streams. Izv.AN Kazakh SSR.Ser.energ. no.9:109-122 '55. (MLRA 9:5)
(Gas flow)

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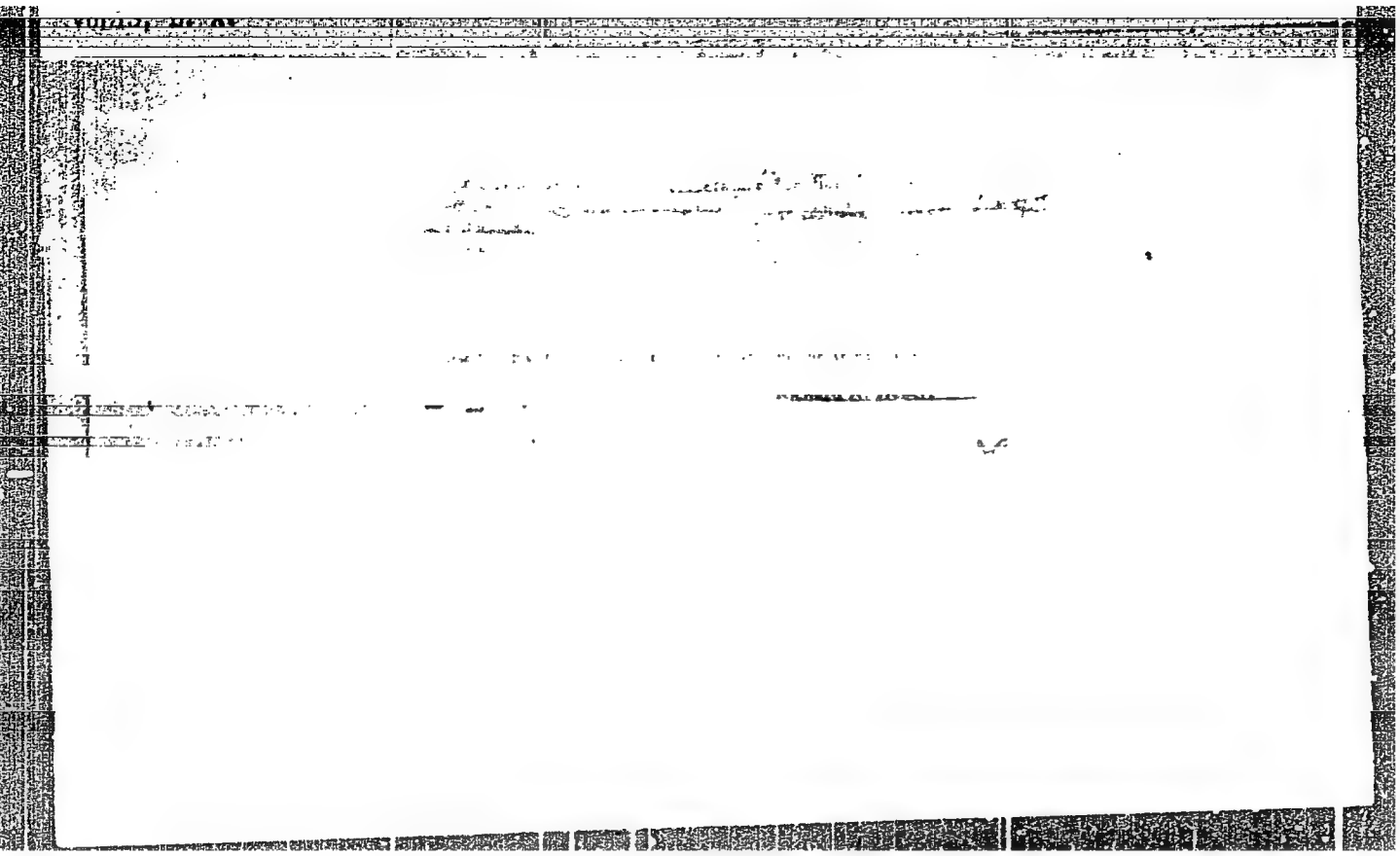

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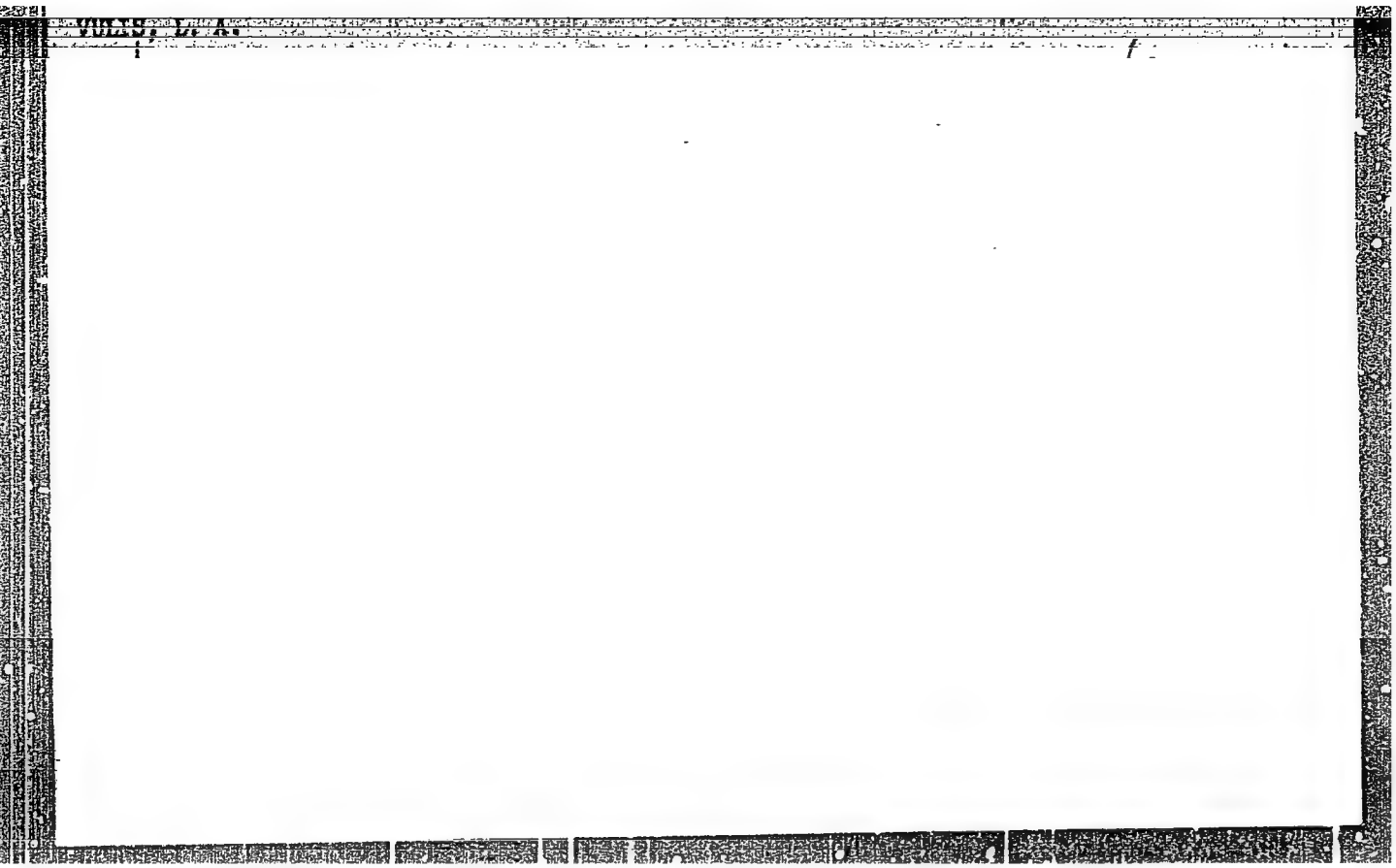

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"APPROVED FOR RELEASE: 09/01/2001 CIA-RDP86-00513R001961310012-7

VULIS, L.A., doktor tekhnicheskikh nauk, professor; USTIMENKO, B.P., kandidat tekhnicheskikh nauk.

Effect of a nonisothermal field on the aerodynamics of flow in a cyclone furnace chamber. Teploenergetika 3 no.4:36-39 Ap '56. (MIRA 9:6)

1.Institut energetiki AN KazSSR.
(Furnaces--Aerodynamics)

The problem of applying data pertaining to the aero-dynamic properties of a cold air flow in a cyclone combustion chamber to the non-isothermal motion of a gas flow in the same type of furnace. Three diagrams, Seven Russian references, 1953-56.

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"APPROVED FOR RELEASE: 09/01/2001 CIA-RDP86-00513R001961310012-7

VULIS, L.A., professor, doktor tekhnicheskikh nauk.

[redacted]

Mixing gases by means of jets. Teploenergetika 3 no.12:37-41 D '56. (MLRA 9:12)

1. Kazakhskiy universitet.
(Gas flow)

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"APPROVED FOR RELEASE: 09/01/2001 CIA-RDP86-00513R001961310012-7

SOV/124-58-1-833

Translation from: Referativnyy zhurnal, Mekhanika, 1958, Nr 1, p 109 (USSR)

AUTHOR: ~~Vulis, L. A.~~

TITLE: On the Calculation of Free Turbulent Compressible-gas Jets (K raschetu svobodnykh turbulentnykh struy szhimayemogo gaza)

PERIODICAL: Izv. AN KazSSR, ser. energet., 1956, Nr 10, pp 87-102

ABSTRACT: The author presents a method for the approximate calculation of compressible-gas jet flows; the method is based on the assumption that turbulent exchange processes in free gas jets are determined by physical quantities such as the density of the flow impulse and excess heat content but not by the velocity or the excess temperature. This assumption was verified experimentally by the author (RZhMekh, 1958, Nr 1, abstract 832) for the case of a change in the jet-flow density due to heating and the presence of gases of different molecular weight. The results obtained are applied to the solution of the problem of the starting range of a slightly twisted nonisothermal turbulent jet in a stationary medium; the paper does not adduce any experimental verification of the results obtained. Bibliography: 14 references.

O. V. Yakovlevskiy

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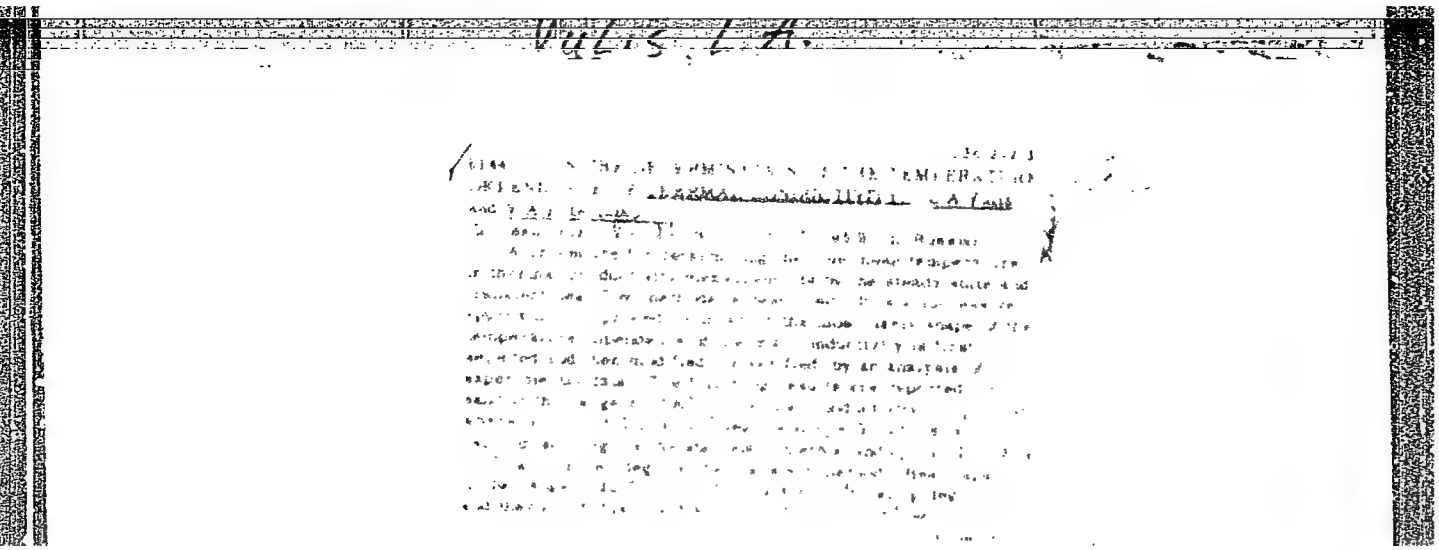

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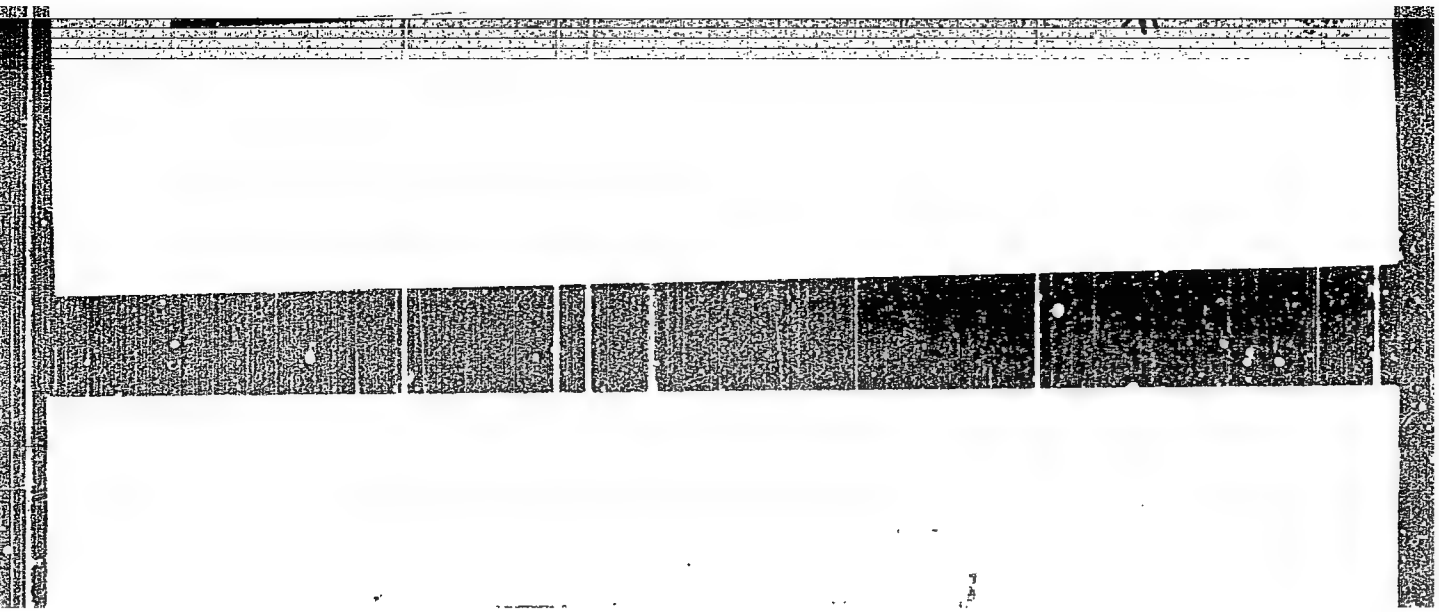

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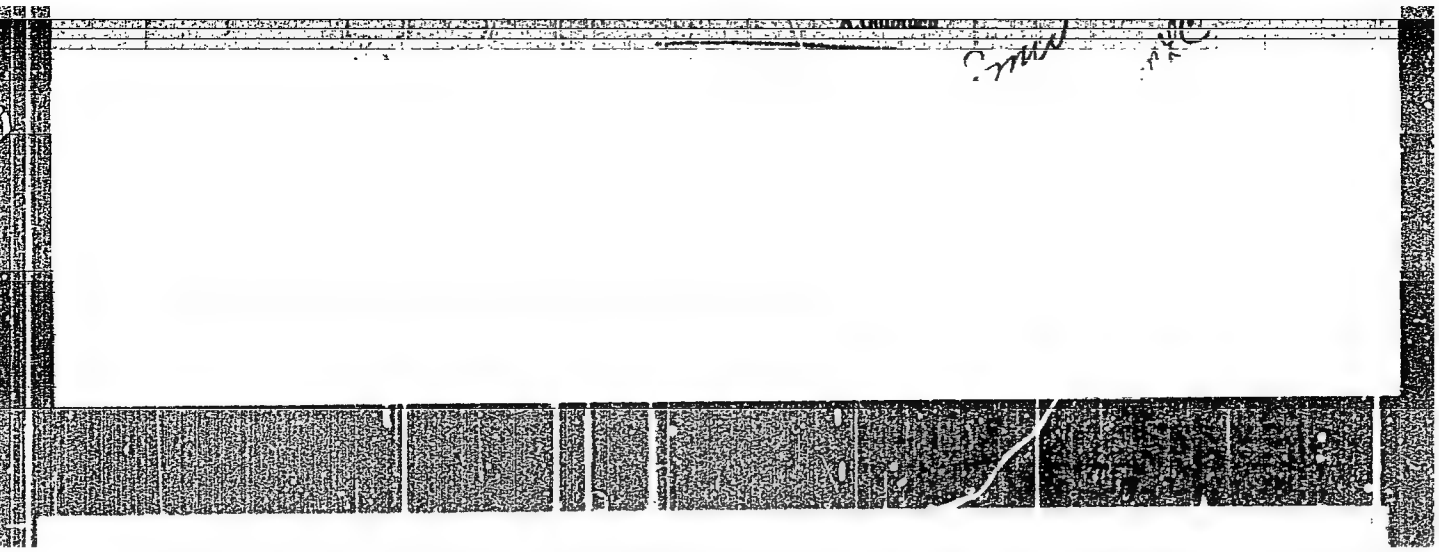

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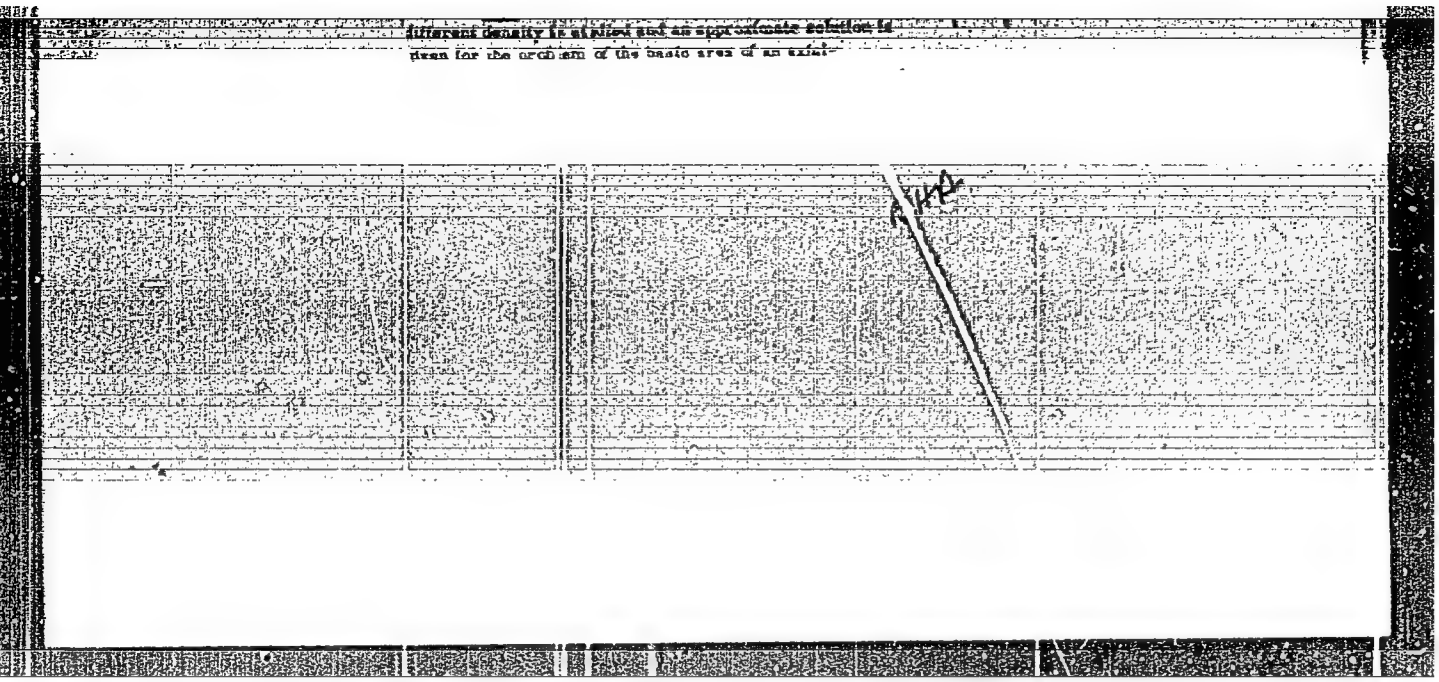

different density is evident and an approximate solution is
given for the area of the basic area of an exist-

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VULIS, L.A.

SUBJECT USSR / PHYSICS CARD 1 / 2 PA - 1824
AUTHOR VULIS,L.A., KASKAROV,V.P.
TITLE The Propagation of a Laminar Vortex Beam of a Noncompressible Liquid along the Surface of a Cone.
PERIODICAL Žurn.techn.fis,26, fasc.12, 2705-2708 (1956)
Issued: 1 / 1957

The laminar flow on an incompressible liquid flowing along a conical surface is investigated. An orthogonal system of coordinates is selected in which the x-axis is located in the direction of the generating line of the cone, the y-axis is vertical to the former, and the coordinate θ is read off the axis of the cone. Zero point is located on the point of the cone. In this system of coordinates the equations of NAVIER-STOCKS, and those for the untearability of an axial-symmetric motion is set up for the case that spatial forces are lacking. These equations are then generalized by means of LAME'S coefficients. On the assumption that the flow is far from the source, ordinary differential equations are obtained from which the velocity profiles (the longitudinal- and rotation components) for the first approximation is obtained for a solution corresponding to an automodel motion. It would not be difficult to obtain even higher approximations. For this purpose it would, however, be necessary to do without the universality of the profiles of the velocity- and pressure-components. For the task under discussion here also the solutions of the heat problems for a noncompressible liquid hold good, which were obtained in a work by VULIS and TROFIMENKO (Žurn.techn.fis 26, 2709, fasc.12, (1956)). The results

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obtained by the present work can be used for the approximated representation of the velocity and the pressure in a turbulent flow at ν_{turb} = const. The qualitative character of the motion is without doubt maintained on this occasion.

INSTITUTION: Kazachian State University, Alma-Ata.

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"APPROVED FOR RELEASE: 09/01/2001 CIA-RDP86-00513R001961310012-7

VULIS, L.A.

SUBJECT USSR / PHYSICS CARD 1 / 2 PA - 1825
AUTHOR VULIS,L.A., TROFIMENKO,A.T.
TITLE Heat Problems connected with a Laminar Beam Propagated along a Wall.
PERIODICAL Žurn.techn.fis, 26, fasc.12, 2709-2713 (1956)
Issued: 1 / 1957

The solution of the heat problem for a flat laminar beam of an incompressible liquid propagated along a wall is found by the integration of differential equations with corresponding boundary conditions. The two first equations correspond to the dynamic problem solved by AKANTOV. The problem is investigated for three types of boundary conditions:

1. For $y=0$, $T=0$; for $y=\infty$, $T=0$, $\frac{\partial T}{\partial y}=0$ (The boundary conditions for temperature and velocity are similar).
2. For $y=0$, $\frac{\partial T}{\partial y}=0$, for $y=\infty$ $T=0$, $\frac{\partial T}{\partial y}=0$ (The beam is propagated along the wall of the non-heat-conductive material).
3. For $y=0$ $T=T_w$, for $y=\infty$ $T=0$, $\frac{\partial T}{\partial y}=0$ (Motion along a wall with constant temperature). In all these cases T is the excess temperature.

These cases are now dealt with separately. The here obtained results and equations and final formulae (for all three cases) are obtained also in the first approximation of the heat problem with respect to the laminar beam emitted

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Žurn.techn.fis,26,fasc.12, 2709-2713 (1956) CARD 2 / 2 PA - 1825

from a radial gap diffusor along a wall. The corresponding dynamic problem has been solved by CUKKER. The relative temperature- and velocity profiles obtained are shown in form of diagrams. The solution of the dynamic as well as of the heat problem can be approximatively added to a turbulent motion on the condition that the coefficients of the turbulence-exchange are assumed to be constant. The relative velocity profiles according to AKANTOV and the experimental results obtained by FOERTMANN differ noticeably. Here the difference in the structure of "turbulent kinematic viscosity" in a flow near a solid wall as well as in one that is located at a certain distance from the wall becomes apparent. The case of a turbulent beam requires special investigation.

INSTITUTION: Kazachian State University, Alma-Ata.

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S/123/59/000/008/039/043
A004/A002

Translation from: Referativnyy zhurnal, Mashinostroyeniye, 1959, No. 8, p. 367, # 31548

AUTHOR: Vulis, L. A.

TITLE: Jet Problems of Applied Gas Dynamics

PERIODICAL: V sb.: Issled. fiz. osnov rabochego protsessa topok i pechey. Alma-Ata, AN KazSSR, 1957, pp. 15-53

TEXT: The author gives a survey of individual investigation results of unrestricted turbulent jets of incompressible liquids and gases. He indicates some problems of further investigations.

Translator's note: This is the full translation of the original Russian abstract.

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"APPROVED FOR RELEASE: 09/01/2001 CIA-RDP86-00513R001961310012-7

VULIS, L.A.

5(1) fp 1,3+4,5,6 PHASE I BOOK EXPLOITATION SOV/1659

Akademiya nauk Kazakhskoy SSSR, Alma-Ata.

Issledovaniye fizicheskikh osnov rabochego protsessa topok i pechey (Investigation of the Physical Bases of Operational Processes of Combustion Chambers and Furnaces) Alma-Ata, Izdat AN Kazakhskoy SSR, 1957. 369 p. 800 copies printed.

Additional Sponsoring Agency: Alma-Ata. Kazakhskiy gosudarstvennyy universitet im. S.M. Kirova.

Ed. (Title page): L.A. Vulis, Doctor of Technical Sciences, Professor; Ed. (Inside book): D.M. Glazyrina; Tech. Ed.: Z.P. Rorokina.

PURPOSE: This book is intended for a wide circle of scientists and industrial engineers.

COVERAGE: The twenty-nine articles of this collection report on experimental and theoretical investigations of different physical

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Investigation of the Physical (Cont.) SOV/1659

phenomena which constitute an integral part of the complex operational processes of modern combustion engineering equipment, and also, the entire process applicable to different types of burners and furnaces (cyclone combustion chambers, muffle burners, burners with automatic stokers, etc.). Articles in Part I treat laminar and turbulent jets of liquids and compressible gas. Part II reviews methods of modeling combustion processes (light, hydraulic and electrical), enthalpy, temperature measurement, calorimetry, etc. Part III relates to different problems and theories of fuel combustion and special operational features of combustion and furnace equipment. No personalities are mentioned.

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"APPROVED FOR RELEASE: 09/01/2001 CIA-RDP86-00513R001961310012-7

Investigation of the Physical (Cont.) SOV/1659

PART I. THE AERODYNAMICS OF JET FLOW

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PART III. COMBUSTION. COMBUSTION CHAMBERS AND FURNACES

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"APPROVED FOR RELEASE: 09/01/2001 CIA-RDP86-00513R001961310012-7

VULIS, L.A.; KASHKAROV, V.P.

Simulating streamlined motion. Part 1. Izv. AN Kazakh. SSR. Ser. mat. i mekh. no.6:3-10 '57. (MIRA 11:4)

(Hydrodynamics)

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"APPROVED FOR RELEASE: 09/01/2001 CIA-RDP86-00513R001961310012-7

VULIS, L.A.; KASHKAROV, V.P.

Simulating streamlined motions. Part 2. Izv. AN Kazakh. SSR. Ser. mat. i mekh. no.6:11-19 '57. (MIRA 11:4)
(Hydrodynamics)

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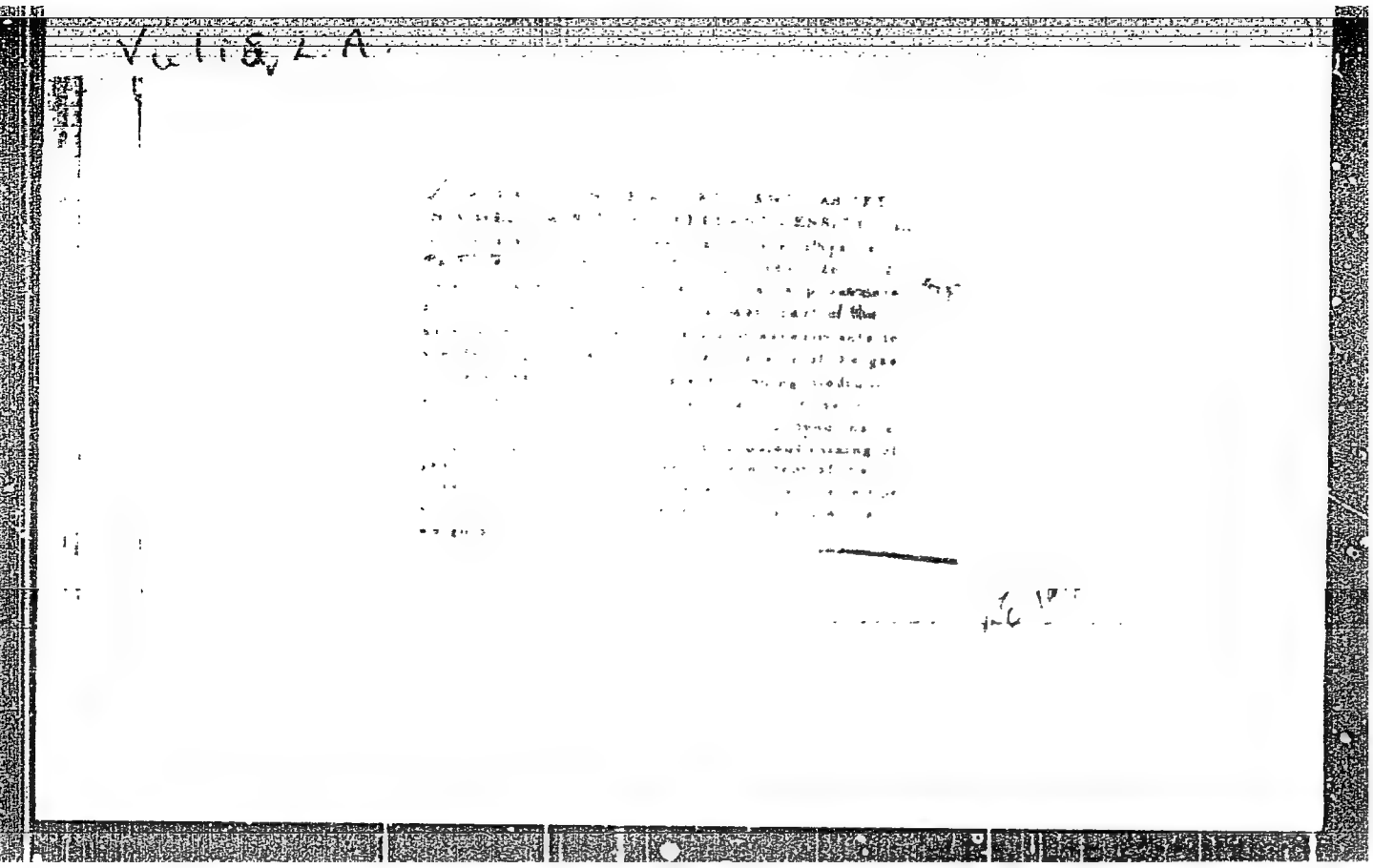

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"APPROVED FOR RELEASE: 09/01/2001 CIA-RDP86-00513R001961310012-7

VULIS, L. A. and TROFIMENKO, A. T.

"Heat-Problems for a Laminar Stream Spreading Along a Wall."
Sov. Phys. - Tech. Phys. Oct 1957, pp 2616-2620

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"APPROVED FOR RELEASE: 09/01/2001 CIA-RDP86-00513R001961310012-7

VULIS, L. A. and KASHKAROV, V. P.

"Motion of a Laminar Twisting Stream of Incompressible Fluid along the Surface of a Cone." Sov. Phys. - Tech. Phys, Oct 1957, pp 2612-2615.

Derivation of the velocity profile (longitudinal and rotating components) for first approximation, corresponding to self-simulated motion.

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"APPROVED FOR RELEASE: 09/01/2001 CIA-RDP86-00513R001961310012-7

VULIS, L. A.

AUTHOR: Vulis, L. A. (Alma-Ata) 24-10-21/26

TITLE: On the Ranque effect. (Ob effekte Ranka)

PERIODICAL: Izvestiya Akademii Nauk SSSR, Otdeleniye Tekhnicheskikh Nauk, 1957, No.10, pp.105-107 (USSR)

ABSTRACT: During the flow of air or of any other gas from a Ranque tube, a difference is observed in the braking temperature in the near-axial and in the peripheral streams; the gas in the tube enters tangentially under pressure and forms inside it a rotating flow. The difference of the braking temperature at the axis and near to the walls reaches several tens of Centigrade. A number of papers have been devoted to experimental investigation or theoretical explanation of this phenomenon (Refs. 2,3,6). For explaining the Ranque effect, the author considers it advisable to investigate the distribution of the braking temperature in a steady state unidimensional circular movement of a viscous gas, for which case the energy equation can be expressed by means of Eq.(1), p.106. Two cases are possible, namely, the quasi-hard flow and the quasi-potential flow. In a real case the circular movement of the gas is characterised by a variable field of temperature braking and, correspondingly, by local energy

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"APPROVED FOR RELEASE: 09/01/2001 CIA-RDP86-00513R001961310012-7

VOLLS, L. A.,

"Turbulent Transfer of Heat and Matter in a Jet Flow of a Gas," Aerodynamic and Heat Transfer Problems in Boiler and Furnace Processes; A Collection of Articles, Moscow, Gosenergoizdat, 1958. 329 p.

Purpose: The book is intended for engineers and combustion specialists concerned with the design and operation of heating equipment and it is also for scientific workers and students of vuzes.

"On the Aerodynamics of the Cyclonic Furnace Chamber, " with Ustimenko, B. P., Ibid.

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10.2000

Translation from: Referativnyy zhurnal. Elektrotekhnika, 1959, Nr 20, p 16, (USSR)

AUTHOR: Vulis, L.A.

TITLE: The Principles of Gas-Torch Aerodynamics

PERIODICAL: V sb. : Teoriya i praktika szhiganiya gaza. Leningrad Gostoptekhizdat, 1958, pp 5-20

ABSTRACT: The burning of a developed turbulent torch is considered from the viewpoint of the theory of turbulent streams on the basis of the asymptotic (infinite) layer theory. A summary of the main characteristics and solutions for the four simplest problems relating to free "drowned" streams is given. An analysis of the problem of the laws of heat and matter transfer in free turbulent streams showed that the best agreement with experimental results is achieved when the Prandtl turbulent number is equal to 0.75. The presence in such streams of something similar to temperature and concentration profiles can be taken as an established fact. Solutions of the thermal (diffusion) problem are given for "drowned" streams. For the industrial burning of gas the principles of turbulent stream propagation

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The Principles of Gas-Torch Aerodynamics

in gas currents - parallel, counter and transverse - have a special importance. The last problem is not solved as yet; for the first two problems solutions are given and it is pointed out that the method of hydrointegration offers the best prospects for the solution of equations of the heat-conductivity type. It is pointed out that, unlike the case of nonisothermic laminar streams, the calculation of nonisothermic turbulent streams is based on a hypothesis, subject to an experimental check: an assumption of the determining role played by the dynamic pressure and the density of the current of surplus heat content in the turbulent intermixing of gas streams of variable density. Aerodynamic schemes of a gas torch, essentially diffusional, are considered. The existing methods of calculation of such a torch are analyzed and the necessity of a further elaboration is emphasized.

A.D.A.

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E073/E335

11.9200

AUTHOR: Vulis, L.A.

TITLE: Turbulent Heat and Mass Transfer in the Case of Jet Movement of Gas

PERIODICAL: Referativnyy zhurnal, Elektrotekhnika, No. 3, 1960, p. 37 abstract 2.1172 (Vopr. aerodinamiki i teploperedachi v kotel'no-topochn. protsessakh. M.-L., Gosenergoizdat, 1958, 81-99)

TEXT: The process of mixing two immobile infinitely extending, incompressible gases of an equal density of the temperatures T_1 and T_2, respectively, is investigated for the case that along the surface of division a flat jet stream is injected which flows from a slot of the width b_o at the speed U_o. Based on the solution of Hertler, a solution can be found for the thermal problem if two assumptions are made on the coefficient of turbulent heat exchange. The temperature profiles and the expressions for the specific heat flow through the division boundary and the local and average coefficients of heat transfer are given. Under turbulent conditions of flow the

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Turbulent Heat and Mass Transfer ...

latter amounts to about U_o and under laminary conditions if amounts to $\sim U_o^{2/3}$. The investigated problem of jet movement of a compressible gas is reduced to comparing the results of a theoretical solution obtained by the author with other solutions based on various assumptions concerning the similarity of the individual fields. Comparison of the results with experiment appears to support the hypothesis of the author on the similarity of the fields of density and heat content of an impulse flow and against the hypothesis of the similarity of temperature profiles and of speeds taken separately. Views are expressed on the redistribution of the total energy in a gas flow in absence of heat exchange with the external medium. Due to the fact that the turbulent Prandtl number is less than 1, fast streams are enriched with energy at the expense of slow ones. This phenomenon is illustrated by results of experiments on the measurement of the coefficient of recovery and the effect of Rank-Kilsh tubes. (Abstractor's note: complete translation.)

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"APPROVED FOR RELEASE: 09/01/2001 CIA-RDP86-00513R001961310012-7

REZNYAKOV, Aleksandr Borisovich, prof., doktor tekhn.nauk; VULIS, L.A., prof., doktor tekhn.nauk, otv.red.; OSADCHIY, F.Ya., red.; ROROKINA, Z.P., tekhn.red.

[Similitude method; essential features and practical application] Metod podobiia; sushchnost' i prakticheskoe primenenie. Alma-Ata, Izd-vo Akad.nauk Kazakhskoi SSR, 1959. 150 p. (MIRA 12:12)
(Dimensional analysis)

APPROVED FOR RELEASE: 09/01/2001 CIA-RDP86-00513R001961310012-7"

"APPROVED FOR RELEASE: 09/01/2001 CIA-RDP86-00513R001961310012-7

VULIS, L.A.

PHASE I BOOK EXPLOITATION SOV/5290

Soveshchaniye po prikladnoy gazovoy dinamike. Alma-Ata, 1956

Trudy Soveshchaniya po prikladnoy gazovoy dinamike, g. Alma-Ata, 23-26 oktyabrya 1956 g. (Transactions of the Conference on Applied Gas Dynamics, Held in Alma-Ata, 23-26 October 1956) Alma-Ata, Izd-vo AN Kazakhskoy SSR, 1959. 233 p. Errata slip inserted. 900 copies printed.

Sponsoring Agency: Akademiya nauk Kazakhskoy SSR. Kazakhskiy gosudarstvennyy universitet imeni S.M. Kirova.

Editorial Board: Resp. Ed.: L.A. Vulis; V.P. Kashkarov; T.P. Leont'yeva and B.P. Ustimenko. Ed.: V.V. Aleksandriyskiy. Tech. Ed.: Z.P. Rorokina.

PURPOSE: This book is intended for personnel of scientific research institutes and industrial engineers in the field of applied fluid mechanics, and may be of interest to students of advanced courses in the field.

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"APPROVED FOR RELEASE: 09/01/2001 CIA-RDP86-00513R001961310012-7

COVERAGE: The book consists of the transcriptions Of 31 papers read at the conference on gas dynamics which was convened under the initiative of the Kazakhskiy gosudarstvennyy universitet imeni S.M. Kirova (Kazakh State University imeni S.M. Kirov) and the Institut energetiki Akademii nauk Kazakhskoy SSR Institute of Power Engineering of the Academy of Sciences Kazakhskaya SSR) and held October 23-26, 1956. Three branches of applied gas dynamics were discussed, namely: jet flow of liquids and gases, aerodynamics of furnace processes, and the outflow of liquids. The practical significance of the "Transactions" of the conference consists in the adaptation of theory to methods of technical computation and measuring methods related to industrial furnaces and other industrial processes in which aerodynamic phenomena play a predominant role. Eight papers read at the Conference are not included in this collection for various reasons. The authors of the missing papers are: L.D. L'vov (Thermal and Aerodynamic Characteristics of Pulverized Coal Flame Burners) and A.A. Goloyevskiy (Outlines and Physical Models of the Jet Motion Mechanics of Fluids), N.I. Akatnov, Ye. P. Bogdanov, S.V. Bukhman, T.K. Mironenko, A.B. Reznyakov, and G.V. Yakubov. L.G. Loytsyanskiy is mentioned as being in charge of a department of the Kazakh State University, and I.D. Malyukov, Candidate of Physical and Mathematical Sciences, Docent, as a member of the same university. References are found at the end of most articles.

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Session of October 25, 1956 (Morning)

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Session of October 25, 1956 (Evening)

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Final Session, October 26, 1955

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